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A Lecture
ON
STERILITY: ITS ETIOLOGY AND TREATMENT.

Delivered at the Medical Graduates' College and Polyclinic on July 21st, 1910,

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GENTLEMEN,—In bringing before you the subject of sterility, I may preface my remarks by saying that it is one of great importance to all who enter upon the practice of medicine generally. It almost invariably is the cause of much unhappiness, and it is a matter of such moment to some that it dominates their lives, and in the case of certain women, to my knowledge, it becomes an obsession. It brings with it such mental suffering and such misery that in certain cases where large properties depended upon an heir, I have known the mind to become unhinged from the constant fretting and disappointment of a childless marriage. Therefore as the family physician is frequently consulted before the patients come into the hands of specialists, it is well that he should devote attention to the study of the causation and treatment of this affliction.

Sterility may be defined as the inability of a woman to bring forth children, but for the purpose of this lecture I shall define it as the inability on the part of a married couple to bring about conception. A woman is said to be sterile because she cannot produce children, and yet she may have conceived repeatedly. Now that is much too large a subject to take up this afternoon, and I shall therefore confine my remarks to the power of conception alone. I have particularly chosen to deal with the matter of the sterility of marriage as concerning both the man and the woman, for although until comparatively recently it was always assumed that the woman was at fault if the man seemed physically fit for the sexual act, we now know that *potentia coeundi* does not necessarily mean *potentia generandi*. It is only in comparatively recent years that we have come to learn how much men are to blame for sterile marriages, and this is largely owing to the work of Noeggerath,[1] which at first received no attention; it was owing to the remarkable discovery of the gonococcus by Neisser that the views of Noeggerath were accepted. This discovery led to the search for the gonococcus in many cases of vaginal discharge, with the result of its discovery, and it also explained many cases of incurable or chronic discharge from the male. Clinical observation led to the knowledge that it accounted for not only discharge from the woman, but for those affections of the pelvis of which I shall have to speak immediately, and which are found to be so frequently associated with sterility.

Sterility in the woman may be divided into primary, relative, and secondary. In primary sterility it is absolute, and by many is said to be congenital, and I may here say that although a woman may live for years with her husband, and may be said to be absolutely sterile, the husband may die, she may marry again, and become pregnant; so that, according to Finger, she is relatively sterile, or, in accordance with the views of others, there is incompatibility. In secondary sterility the woman has borne one or more children, and then, for no apparent reason, is unable to beget more children, although the husband remains strong and healthy and the woman has no reason to believe that she is otherwise than perfectly well.

ETIOLOGY.

In the first place, I shall enumerate some of the causes to which sterility may be attributed on the part of the woman, but I would say that I have no intention of dwelling on the sterility which is brought about voluntarily by practices which are used for the prevention of conception. It is somewhat remarkable that such practices frequently bring their own punishment, for interfering with natural processes may cause permanent sterility. It is difficult to explain this in all cases, and I shall not take up your time by attempting to do so, but I have now seen many cases of sterility following these practices, adopted after the birth of one child, which have been discontinued because, after a certain number of years, a second child has been desired, and it has been found impossible to get one. I do not allude to the so-called "one-child" sterility, which is well known, and where, as a rule, inability to conceive may be traced to a puerperal infection or other causes, but I am now speaking of cases where conception has been deliberately prevented for some years—not by voluntarily living apart, for I have known many such cases—and where there is no reason to suspect puerperal trouble, the one confinement having been perfectly normal, and where there has been absolutely no ground for putting the sterility down to infection by the gonococcus.

Before entering upon the structural and functional causes of sterility in women, it may be interesting to quote some figures which have been collected as bearing on the subject of age. Matthews Duncan[2] says that the main element in the expectation of sterility is the age of marriage. According to statistics, the question of whether a woman will be sterile or not after marriage is decided within three years from the date of marriage, only 7 per cent. bearing after this period. Duncan has shown, according to figures, that marriage itself, in the very young, from 16 to 19 years of age, is a cause of sterility; and although these figures certainly show that conception is less likely in very early marriages, in this country at least, it is extremely difficult to ascertain the capability for propagation in the woman. It is far more easy to do so in the man, but in the woman it is not only a case of testing the capability of the ovum for development, analogous to that of the spermatozoa, but also of ascertaining the possibility and likelihood of the ovum and spermatozoa meeting together, and of the fructified ovum finding a lodgement. But whilst the difficulties of investigation become thereby multiplied as in the variation and permutation of an algebraical problem, the area of objective discovery becomes narrowed down to quite small limits. The vagina and portio are all that are open to ocular inspection, our remaining conclusions must be drawn from tactile impression and general examination.[3] The amount of sterility in woman is found by counting the number of productive and non-productive marriages of women within the reproductive age, from 15 to 45. West found that the number of sterile marriages amongst his patients at St. Bartholomew's Hospital averaged 1 in 8·5. Sir James Simpson found in a certain district that 1 marriage in every 10 was unproductive.[4] In 402 marriages in one place Matthews Duncan found that 1 in 11 was sterile. These latter two correspond fairly well. But it would be manifestly inaccurate, looking to the etiology in many cases, which we must discuss later, to take statistics from gynæcological out-patient departments, as was done by West. Of 495 marriages of British peers collected by Simpson, which had lasted five years or more, and in which the husbands were under 57 years of age, 1 in 6½ were sterile. Different statistics of sterile marriages collected from different sources, although showing figures which are not quite the same, go to prove that it is fairly accurate to state that in Great Britain the number of unfruitful marriages is 1 in 10.[5] This shows how important the study of sterility becomes, for we know that the average healthy woman living in wedlock all her child-bearing life should have 10 children, so that 1 sterile marriage in 10 means an enormous loss to the State—no less than 1000 children for every 100 marriages. An accurate knowledge of etiology, leading to careful treatment, would help to diminish this loss. If the husband is healthy for copulation and procreation, we must remember that the following conditions are necessary in order that fecundation may ensue: (1) Normal ovulation; (2) cohabitation; and (3) opportunity of meeting of the ovum and spermatozoa.

Sterility may always be attributed to defects in one of these conditions. We have no exact knowledge of the normal process of fecundation. Ovulation and menstruation may occur independently. We cannot say if discharged ova are ripe, but we assume that they are in any "sexually ripe" woman.[6]

The causes of sterility, apart from age, may be divided into structural and functional. It will be easiest to trace the

[1] Die Latente Gonorrhœa au Weiblichen Geschlecht, Bonn, 1872.

[2] Matthews Duncan: Sterility in Women. J. and A. Churchill, London. 1884.

[3] Torkel: Sterilität des Weides Monatschrift für Geburtshulfe, Gynäkologie, 1887, 26, pp. 361 to 407.

[4] Duncan: Op. cit., p. 9.

[5] Duncan: Op. cit., p. 12.

[6] Torkel: Op. cit., p. 5.

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causes of structural sterility in women from without inwards, and the following classification appears to be practical:—

I. *Structural.*—(*a*) Any condition which causes physical obstruction in the sexual act, such as a tough and unruptured hymen, vaginismus, &c.; (*b*) affections of the vagina and cervix, as atresia of the vagina, vaginitis, &c.; (*c*) affections of the uterus and adnexa; and (*d*) any condition, apart from the pelvic organs, leading to inflammation of the peritoneum, as appendicitis.

II. *Functional and constitutional causes.*—Incompatibility, dysmenorrhœa, general diseases, underfeeding, alcohol, obesity. It will be more satisfactory to review these causes generally in this lecture than to devote too much time to any particular division.

With reference to the physical obstruction of an unruptured hymen, it must be remembered that although in the vast majority of cases this causes sterility, yet it does not always do so. There are many cases on record where pregnancy has occurred with an unruptured hymen. We know that a very small amount of seminal fluid may contain very numerous spermatozoa, and as they are exceedingly mobile, an explanation of the conception is forthcoming. The hymen is sometimes so tough that it requires a considerable amount of force to break it down, and in certain cases this has never been done by the husband. I have now had many cases where the hymen has not been broken down and where the woman has been led to consult me after many months, and in one case as much as five years after marriage, because conception had not taken place. In some of these cases the patients suspected that there was something wrong; in others they were entirely in ignorance of it. It is obvious that if the spermatozoa do not gain access to the uterus no conception can take place, and although, in the case of an unruptured hymen, there is a faint chance that they may do so, there are other conditions which entirely preclude all chance of such happening. Amongst these must be considered that most horrible of all afflictions for a young married woman, vaginismus, and other conditions of the vulva leading to dyspareunia. It is impossible with the time at our disposal to do more than mention them, for a whole lecture might be devoted to vaginismus and dyspareunia, but it may be safely said that whilst these affections continue in an aggravated form no conception can occur.

It is usually thought that polypus of the cervix, as well as uterine fibroid, blocking the cervical canal, and flexions of the uterus, give rise to sterility by mechanically preventing the ingress of the spermatozoa. This, however, in my opinion, is very doubtful, for where the menstrual fluid passes the spermatozoa can travel. My belief is that in the presence of a mucous polypus or a submucous fibroid it is the secretion of the mucous membrane which is inimical to conception, and this leads me to speak of the whole of these inflammations giving rise to increased secretions which have such an important bearing on conception. The ordinary healthy secretion of the vagina is acid, and that of the uterus and the cervical secretions alkaline. The vagina is lined with stratified squamous epithelium, and this forms a good protection against the invasion of the submucosa by bacteria. It is the same covering as that of the inner part of the vulva. Unlike the epithelial covering of the vestibule and inner surface of the labia minora, it possesses no glands. As a rule, there are no glands in the vagina, so that what is called the vaginal secretion is not largely of vaginal origin. It consists of transuded blood serum mixed with the excretions of the uterus. Under the microscope it is found to be composed of desquamated epithelium, leucocytes, and micro-organisms. The acidity is due to the bacillus of Döderlein, which produces lactic acid, and other organisms are present in the vagina. The acidity of the vaginal secretion, and the antagonism between the normal vaginal bacilli and the pathogenic organisms which chance to gain an entrance, are factors in the protection which the vaginal secretion affords.[7] Inflammation of the vagina usually depends upon the repeated introduction of organisms combined with a mechanical irritation or injury, or upon some general condition which lowers the normal resistance of the vaginal epithelium. Nearly all cases of vaginitis are secondary to lesions of the uterus or tubes, and result from the accumulation in the vagina of irritating uterine discharges. The gonococcus is most likely the commonest cause of vaginitis. Whatever be the starting point of catarrhal conditions or inflammation of the mucous membrane of the vulva, vagina, cervix, uterus, or tubes, the result is more or less continued secretion, which is deleterious, and acts in a toxic manner on the spermatozoa. My belief is that although it takes but a small number of spermatozoa to effect conception, the secretion from the diseased surfaces of any of the above-mentioned parts is sufficiently toxic to immediately kill them. I do not believe that they are mechanically hindered from gaining entrance to the uterus by any thickened plug of mucus at the os uteri; they are able to move onwards through any discharge, provided they are not killed by the poisonous action of that discharge. This toxic action of these secretions is probably due to the living organisms they contain which are antagonistic to the spermatozoa.

In passing to affections of the uterus and tubes, it is obvious that congenital affections, such as the absence of either, is sufficient to account for sterility, and it is waste of time to discuss them; but I should like to speak generally of inflammatory affections of the tubes as a cause of the subject under consideration. I have already said that any discharge from either the tubes or uterus may be inimical to conception, but in the case of metritis and endometritis it is quite possible that, owing to the altered condition of the mucous membrane, there is not a sufficiently healthy nidus for the ovum, and that even though spermatozoa do reach it and impregnation takes place, the ovum is immediately destroyed without giving rise to any extraordinary signs. Although much time might be taken up in discussing this one point about the condition of the uterine mucous membrane with reference to conception, I want more particularly to dwell upon the inflammatory affections of the tubes as having a most important bearing on the whole question of sterility. It is clear that unless at least one of these tubes is patent the ovum cannot reach the uterus. But the most important point is that the opening of the tube into the peritoneum must be undisturbed. The ciliated epithelium lining the Fallopian tube and uterus is always in action, and as a result there is a continuous stream of fluid passing from the peritoneum to the vagina, and in this stream the ovum is carried when it is discharged from the Graafian follicle.

The spermatozoa are working against this stream, and it is on this account that the meeting takes place, but it is difficult to say where it occurs. It is interesting to note that the study of extra-uterine pregnancy shows that impregnation of the ovum may take place before it reaches the uterus, and rarely before it leaves the ovary. It is most likely that impregnation occurs as the ovum passes along the Fallopian tube. It is not known at what rate it travels, but we know that it must take some time for the syncytial buds to appear, by which means the ovum penetrates the mucous membrane of the uterus and is arrested. Some think that if impregnation takes place after the ovum has passed through the Fallopian tube and is actually in the uterus it may explain the occurrence of placenta prævia, as in this case the ovum may reach the lower part of the uterus before the syncytium has sufficiently developed to fix upon the mucous membrane.[8] No doubt many ova become impregnated in the uterus and are carried away before any development has time to occur. It is possible also that in many ova the syncytial buds may be imperfectly developed, leading to frequent early miscarriages, because for healthy conception to take place we must have a healthy ovum as well as healthy spermatozoa and normal mucous membrane. We know that if the ciliated lining of the genital canal is not normal and active, conception does not take place, for the ovum is not moved along by the cilia towards the uterus, and the meeting with the spermatozoa does not occur. This diseased condition of the lining of the tube, causing loss of ciliated epithelium, gives rise to irritating secretion, which may escape into the peritoneal cavity and set up local peritonitis which may effectually seal the tube. A very common source of sterility, in my opinion, in women, and one which is not apt to be thought of after the attack is over, is appendicitis. I believe that attacks of inflammation of the appendix are answerable for the local attacks of peritonitis which seal up the ostium of the tube, effectually preventing conception. It is the starting point frequently of inflammation, which spreads from the appendix and causes matting of the tube and ovary in adhesions. After

[7] Kelly and Noble Gynæcology and Abdominal Surgery, p. 257, 1908.

[8] J. R. Kelly: Sterility in the Female, its Causes and Treatment. Glasgow Medical Journal, 1906, lxv., p. 401.

a severe attack of appendicitis both tubes may be involved and closed, and adhesions formed which may become more or less permanent. Gonorrhœal inflammation is, of course, extremely common as a cause of sterility in the female on account of its leading to salpingitis, as well as inflammation of the lining membrane of the uterus and cervix. Whatever be the cause of the inflammation the result is the same.

Another most serious affection of the uterus and annexa is that of puerperal inflammation. It is unquestionable that it largely influences the percentage of sterility in women. It is frequently the cause of the "one-child sterility" to which I have already alluded. It is difficult to say exactly in what way it causes sterility, but it probably does so through the peritonitis it sets up, which either seals the tubes or causes salpingitis, with affection of the ciliated epithelium, effectually offering a barrier to conception, or affects the uterine mucous membrane, rendering it an unhealthy nidus for the ovum. It is interesting to note that in certain cases of sterility following severe confinement, during which the patient has been said to be very ill, the condition may be present for many years, and subsequently conception occurs. This shows that in all cases of puerperal sterility the women are not necessarily sterile for life, and that it is not right to abandon all hope of conception. It proves also the healing power of nature, for after the lapse of time the mucous membrane of the uterus and Fallopian tube recovers itself, the adhesions round the orifice yield, and the tube is once more patent, so that conception can occur. It cannot, of course, be expected that recoveries will take place in such cases as double pyosalpinx, where the tubes are enlarged, with the mucous membrane necessarily damaged and the walls distended and thinned, for in these cases there is nothing to be done which can cure the sterility. In the case of hydrosalpinx, a chance of conception is given by making an artificial entry into the tube. In some cases this has been successful. Of course, if the tube is so distended that its walls are seriously damaged no hope can be expected of effecting any good.

In the case of the ovary, anything which prevents the rupture and discharge of the Graafian follicle into the peritoneal cavity will cause sterility. Sometimes this is due to the thickening of the capsule of the ovary, which may be the result of inflammation. In these cases, as the result of the unyielding capsule, we have a form of small cystic ovary, enlarged and painful, which on section shows the cortex to be occupied by a series of dilated Graafian follicles, unable to open on the surface owing to the thickness of the tunica albuginea. The encapsuling of the ovary by adhesions will prevent the breaking of the follicles. It is easy to understand that the ovary may become the seat of inflammatory adhesions, when it is remembered that it is subject to frequent lesions from the bursting of the Graafian follicles on its surface. Each rupture causes a wound, and whenever any pelvic inflammation is present these wounds may be attacked and lead to thickening of the capsule of the ovary.[9]

In the majority of cases the actual origin of local peritonitis is to be found in a salpingitis, but it must always be remembered that the origin of many pelvic troubles must be attributed to the communication between the peritoneal cavity and the external world by means of the tubes, uterus, and vagina. It is easily conceived that anything in the secretions from the vagina onwards may interfere with the spermatozoa. According to bacteriologists, the lower parts of the vagina are crowded with micro-organisms in a healthy woman, and in the upper part of the vagina there are very few, whilst in the interior of a healthy uterus there are none. Some believe that the secretions from the cervix destroy bacteria.[10] This is certainly remarkable if true, for by this means the upper part of the vagina, where the spermatozoa are lodged in the first place, is kept sterile and keeps them from harm. If, however, from inflammatory disturbance of the mucous membrane of the cervix endometrium or vagina pathogenic organisms gain access and breed there, they have a baneful influence on the spermatozoa, which are killed at once or rendered inert. Undoubtedly, amongst the common causes of inflammatory affections of the mucous membrane must be mentioned the gonococcus. By its introduction into the genital canal more or less severe inflammations of the mucous membrane are started, which lead to salpingitis, sealing up the ends of the tubes or affections of the mucous membrane, which effectually act as a bar to conception.

Diseases of the ovaries must, of course, be mentioned as a cause of sterility, and although tumours, whether cystic or dermoid, are frequently the apparent cause of the want of conception, yet they are not always so. Considerable enlargement and disease are quite compatible with pregnancy, and this ought to be remembered in operating, when it is necessary to remove an ovarian cyst and when the opposite ovary is inspected. It is tempting to remove the second ovary if apparently diseased, but if the woman is still within the child-bearing age, and anxious to have children, unless the ovary is seriously diseased it may be left. I quite remember the case of a patient, 28 years of age, who had a dermoid cyst, and who was seen with me by Sir Spencer Wells. He removed it, and I assisted him at the operation. In inspecting the opposite ovary, he said that he must remove it because it was so enlarged and cystic. I reminded him that the patient had only recently been married, that there was a large amount of property, and that she was most anxious about having a child. I therefore begged Sir Spencer Wells to leave the ovary, but he did so with much reluctance, saying it was against his better judgment, because he thought that it would mean another abdominal operation, as the ovary, judging from its then state, would grow. The patient made an excellent recovery, and I subsequently attended her during her confinement, when a son was born. Since then she has never suffered from any trouble in the ovary, although it remained large up to the time I last saw her. Such a case is worth remembering, and is not the only one where I have advised an apparently diseased ovary to be left, with the result that conception has followed.

I must refer to two matters which are of great importance in this study of sterility in the female. One is the association of dysmenorrhœa with sterility, and the other is the relation of the sexual appetite and sexual pleasure in those who are sterile. In 332 cases of absolute sterility that is, excluding all women who have miscarried or borne a child—nearly half suffered from spasmodic dysmenorrhœa.[11] This shows what an important association exists between sterility and dysmenorrhœa. Nor can it be doubted that between dysmenorrhœa and miscarriage there is also a close association. The relation of the sexual appetite and sexual pleasure in the sterile—must be carefully considered as a whole, and especially in accounting for what is termed incompatibility as a cause of sterility. It is very difficult of explanation, but it is remarkable that a woman may live with her husband for years, remaining sterile all the time, may marry again, and immediately conceive, notwithstanding that the first husband was sexually sound. In some of the cases I have investigated I have found that sexual pleasure was absent with the first husband and present with the second, and that there was no true sympathy with the first husband, but rather antipathy. It is thought by some that in these cases the man has something to do with the sterility, but I do not think so, for if he be thoroughly sound, with normal spermatozoa, there seems to be apparently no reason against conception. The vagina, uterus, and Fallopian tubes, like the intestine, are muscular tubes. During the sexual orgasm there is a coördinated action of this muscular tube, which has for its object the helping onwards of the spermatozoa into the uterus. In certain women who are sterile this never takes place, because they never have any sexual feeling. In these cases the sexual centre in the spinal cord or in the sympathetic system, which should regulate the movements of the genital canal, is either imperfectly developed or is congenitally absent. In many cases of sterility which I have investigated there has been complete absence of sexual desire and sexual pleasure. Yet this absence must be by no means considered to occur only in the sterile. Those who are conversant with these cases know well that this absence occurs in many women who have children. It cannot, therefore, be said to be the cause of sterility, although so frequently associated with it. Moreover, we know that not only may there be complete absence of sexual desire and pleasure, but there may be positive sexual antipathy, and to some the act is absolutely revolting, and yet conception occurs. But, on the whole, it may be

[9] J. R. Keily: Op. cit.
[10] Menge and Kronig: Bacteriologie des weiblichen Genitalkanals.
[11] Duncan: Op. cit.

said that the absence of sexual feeling is a powerful factor in the causation of sterility.

Before passing on to sterility in the male, there are certain general diseases in the female producing sterility which I must touch upon. Any severe illness which causes a wasting of the uterus or ovaries will obviously produce sterility, and a severe labour may be followed by atrophy of the uterus, preventing fruitful conception. In those cases of profound illness followed by sterility lasting for years, and where conception subsequently takes place, it cannot be doubted that some important changes occur in the ovary, although temporary in character. Tubercle, mumps, or any other acute infectious diseases, may bring about sterility by their action on the ovaries. The more important and common causes of these changes in the pelvic organs are certainly alcohol and morphine, which act as chronic poisoning. They frequently produce amenorrhœa for long periods. With alcohol is often associated obesity, which is so frequently observed accompanying sterility. It is difficult to see why excessive fat should interfere with the sexual organs, but it does so. Out of 215 cases of obesity Kisch found 21 per cent. sterile. Cobbard associates the changes in the ovaries in obesity with those in the thyroid gland and suprarenal bodies.[12] We know that amenorrhœa is often accompanied by obesity, and in some cases the gain in weight is rapid, and after the menopause in the majority of women there is increase in weight, as also is the case in the removal of the ovaries before their functional activity is over. It is not known yet what is the actual cause of this increase in fat, but there can be no question about the increase of adipose tissue when the functional activity of the ovary and the glandular corpora lutea disappear.[13]

There is another and most important cause to which I must allude before passing on to sterility in man. This is known as profluvium seminis, and is a fruitful cause of sterility, and very difficult to get rid of. It is obvious that whilst it is present there is but small chance of conception. I say "small chance," because we know that a minute quantity of seminal fluid is enough for conception, and without doubt women who are afflicted in this manner do sometimes conceive.

STERILITY IN MAN.

And now we must pass to the causes of sterility in man. They may be divided into (1) any condition which prevents the sexual act; (2) any condition which affects the development of the spermatozoa or interferes with its fertilising power.

With reference to the first division, I may briefly say that it is obvious if congenital malformations are present, or such want of nervous force that sexual intercourse cannot take place, no conception will occur, and we need not take up time in discussing the various conditions which may be present to prevent this. But under this heading I must, as we are discussing sterile union, include a form of what is termed incompatibility. I have known some instances of healthy men marrying who were unable to consummate their marriage and yet who have been sexually strong. Several I have known of who have lived for years with their wives and could never have intercourse with them, yet they were sound and capable with other women. I am not now alluding to cases where marriage takes place and where from pure nervousness intercourse cannot occur. Such cases are met with, but, as a rule, although the condition may last for some time, it passes off entirely; but I am speaking of those cases, happily rare, where a man marries, and for some unaccountable reason can never have intercourse with his wife. I know of one who was divorced for incompetence, who married again, and who had children. The cause was some peculiar psychological aversion.

The second division is what principally concerns us as causing sterility. According to the accumulated statistics of Kehrer, Gross, Levy (Munich), Balin, and others, 26 per cent. of all cases of marital sterility are due to the husband alone from azoöspermia, a fluid containing no living spermatozoa, aspermatism, and malformations. Balin states that out of 200 men living in sterile union, whose wives showed normal genital conditions, 73 were subjects of azoöspermia. Cases of impotence and oligospermia are not included in those calculations. In oligospermia, which may come from a chronic vesiculitis, the living elements are few or they may be absent, though dead ones or those with feeble movements may be found—necrospermia. Oligospermia may occur after sexual excess and is only temporary. In a certain number of oligospermatics the condition remains permanent in consequence of congenital disease. The existence of oligospermia depresses, but does not take away the power of fecundation. As a rule, azoöspermia is the sequence of gonorrhœal diseases of the testes. Gosselin showed this to be so in 1853. Out of 83 men with double gonorrhœal epididymitis Liegois found permanent azoöspermia on 75 occasions, and Finger found it 207 times out of 242 cases. Azoöspermia has also been observed in syphilitics. In isolated cases it passes off after the introduction of specific treatment. Frogs' spermatozoa when frozen and thawed regain their mobility, but these frozen spermatozoa lose their power of conception.[14]

Torkel[15] doubts whether the mobility of the spermatozoa, which is held to point to their capability for begetting, is a certain index in all cases. It may be that he is right, but up to the present moment I know of no other evidence upon which to go when forming an opinion as to the cause of a sterile union when the woman appears to be healthy as to her pelvis. It is quite possible that some subtle changes may take place owing to disturbances in the circulation and the introduction into the blood of some substances injurious to protoplasm, and that the spermatozoa, although active, may have lost the power of fertilising the ovum, as in the example alluded to of the frozen spermatozoa of the frog. Dr. Lewis Jones informs me that "in the case of such animals as rats, irradiation by X rays produces well-marked histological changes in the testes, and an absence of spermatozoa from the semen. In human beings the effect is apparently temporary, but it is a fact that radiographers become azoöspermic." The action of the Roentgen rays is a corrosive one, to which the non-resisting elements—in this case probably the spermatocytes and spermatids of the seminal tube—are the first to be sacrificed, and are prevented from developing into spermatozoa. Radium may possibly act in the same manner. It is well known that with highly organised cells, spermatozoa and ova being the most highly organised of such, harmful influences which last but a short time may have the most severe consequences. It is certain that gonorrhœal inflammation, which is the most fruitful source of azoöspermia, cannot affect all in the same way, and it is not yet known how long the effect of an attack of gonnorrhœa with reference to the spermatozoa may last. For we know how common this disease is, and how soon it may pass off in some. It is possible that it is only in the more severe cases that the structure of the testes is permanently attacked, causing azoöspermia for many years, or perhaps indefinitely. A sudden attack of orchitis, even though it may last but a short time, may have such influence on the secreting structure as to permanently damage it, notwithstanding that the gland is to the naked eye and to the touch normal in all respects. Out of 87 sterile women, Glunen[16] was enabled to prove the presence of gonorrhœa due to the husband in 24 cases without any doubt, and among the remaining 63 women whose husbands declined to submit to an examination there were still signs of gonorrhœa in 38 cases, so that out of 82 marriages gonorrhœa was found to be present in 62 cases, or 71·3 per cent. It is unnecessary to weary you with statistics, but I may briefly state that Balin found, among 188 husbands of women with healthy genitals living in sterile union, 97 had without doubt suffered from gonorrhœa. Badeler found blame attaching to the husband in 70 per cent., and Lier and Ancher in 40 per cent. of sterile marriages. It must not, however, be assumed that because the gonococcus is so frequently found in cases of sterility that its presence is always followed by those conditions which preclude conception.

TREATMENT.

Although in this lecture I have intended to discuss sterility as the inability of a married couple to bring about conception, and have therefore mentioned the causes affecting the husband, it is not my intention to dwell upon the treatment for sterility in the male. I may merely mention that in the scheme for thoroughly going into the causation of a sterile marriage the possibility of the husband being at

[12] Medico-Gynæcology, p. 349.
[13] Kelly, p 226.
[14] Torkel.
[15] Torkel: Sterilität des Weibes Monatschrift für Geburtshulfe W. Gynäkologie, 1907, xxvi., pp. 281-407.
[16] Torkel: Op. cit.

fault must be borne in mind. In every case of sterility which comes before me, if, after thorough examination of the wife, I consider it advisable to have the husband examined I recommend that this should be done by a bacteriologist. I say that I do this if I think it necessary, for in many cases of sterility about which you will be consulted it is undoubtedly the fault of the woman, which is proved by the fact that conception follows treatment. It is best to ascertain whether there is any difficulty about intercourse, especially in those who have recently married, but it is most important not to take for granted that this takes place in the ordinary manner if a patient has been married a considerable time, because I have notes of a certain number of cases where there has been no proper intercourse for years after marriage. It is important to find out in the necessary questioning whether there be any sexual pleasure or desire, whether intercourse takes place at reasonable intervals or very seldom, and whether there be reason to suspect that the husband is wanting in power or suffers from indifferent health. Notwithstanding the exceedingly delicate nature of these inquiries, there is rarely difficulty in getting accurate answers, which enable an opinion to be formed. After eliciting anything which can throw light on the possible cause of sterility, a regular pelvic examination may be made in the ordinary manner, noting the position of the uterus, whether it is moveable, or whether there be any signs of previous pelvic inflammation; the condition of the cervix uteri, whether it is normal, conical, or unusually small, or if the os be closed or patulous, whether it seems natural to the touch or unhealthy. Any tumour of the uterus or swelling of the ovaries or tubes can be noted, and whether there are signs of inflammation of the mucous membrane of the vulva, vagina, or glands of Skene or Bartholin. It is especially of importance to make sure whether there be any vaginal discharge, and what its character may be. In certain cases it is copious and exceedingly irritating, as is evidenced by the condition of the mucous membrane. It such cases it may be assumed that if the discharge has such an intensely irritating effect on the mucous membrane it is certain to be inimical to conception. It is best to have it bacteriologically examined.

If it is found that there is a tough and unruptured hymen, it may be dealt with by either cutting it away or rupturing it. The latter is quite sufficient in any case where there is no vaginismus, and to make sure that there is no difficulty beyond the tough and unruptured hymen, glass dilators may be passed to secure thorough dilatation of the vagina. If the latter seems to be abnormally small, or if hyperæsthesia of the vulva outlet be present, then glass dilators may be given to the patient, with directions for passing them herself. One ought to be passed every day for a time, vaseline or some other lubricant being freely used, and before using the dilators it is best to apply a solution of cocaine, 10 per cent., or 20 per cent. if the hyperæsthesia be severe—cocaine vaseline acts in the same way. If the hyperæsthesia be not severe this will probably entirely cure the condition, the stretching of the vaginal walls apparently diminishing the sensitiveness, and doubtless helping to overcome the feeling of apprehension which exists in these cases and which invariably makes the condition appear worse than it really is. But there are cases of really severe vaginismus which thorough dilatation under an anæsthetic does not relieve, and when, in spite of cocaine vaseline applied freely before any attempt at intercourse, it is impossible to tolerate it. In these cases dilators are of no service, for the smallest cannot be tolerated, and in certain cases I have had under my care life has been a burden, the nervous system has become affected, extreme irritability complained of, and in some cases regular neurasthenia is developed. In such cases the only treatment which I know of as thoroughly efficient is the application of the Paquelin cautery. It may be lightly applied to the inner sides of the labia minora and all round the orifice of the vagina, and especially to the posterior fourchette. This must, of course, be done under an anæsthetic, and before doing so I ascertain the most sensitive points, for although in some cases the whole of the orifice of the vagina is implicated, and the slightest touch causes instant contraction, there are other cases where some points are specially sensitive, and these can be borne in mind in applying the cautery. In some of the cases of dyspareunia I have noted minute fissures and small follicular ulcerations about the fourchette and entrance to the vagina. These are exceedingly sensitive and are often the cause of the vaginismus. The Paquelin cautery is the most rapid method of curing these.

There is another condition associated with dyspareunia, met with in a few cases in women over 35 years of age, who have married without knowing there was anything wrong—caruncle of the urethra, which is exquisitely painful. Removing with the Paquelin cautery, or cutting away and then applying the cautery, has entirely cured these in my hands. After the application of the Paquelin cautery to the mucous membrane or to the caruncle, I usually apply a 10 per cent. solution of cocaine on wool. This saves a great deal of pain on regaining consciousness. The parts touched must be treated as an ordinary burn until perfectly healed. There can be no doubt that the extreme sensitiveness is caused by the terminal ends of the nerves supplying the mucous membrane, and that when they are deadened by the cautery the sensitiveness disappears. It is most important that the cautery should be very lightly applied. It is quite unnecessary and harmful to burn deeply. Should there be a narrowing of the vagina, it may be dealt with at the same time by thorough dilatation.

Supposing it is found that the vagina is full of muco-pus, that the os is patulous and the lips roughened, with a history of prolonged vaginal discharge and excessive menstruation, then the best treatment is to curette thoroughly, without any delay, for, if the symptoms are severe and have lasted a long time, curetting is better and more efficacious than douching or any local treatment, which sometimes may be tried for many months without permanent good, as very often when the douching ceases the discharge returns. Any discharge ought to be carefully examined bacteriologically for gonococcus, staphylococcus, or streptococcus; occasionally the bacillus coli is found, and if curetting is not advised cultures may be made from the discharge and a vaccine prepared accordingly. Up to the present I have not had sufficient evidence in its favour to warrant me in urging this method in all cases before curetting is undertaken. Nevertheless, I have known some cases where the treatment has been striking in results, and these may justify the enthusiasm evinced by some. Of course, if it succeeds in curing the discharge, that is all we want, for it will save the operation of curetting, and the cessation of the discharge may lead to conception. If it does not succeed after two months' treatment curetting can always be resorted to. I wish to lay great stress on vaginal discharge of any kind in cases of sterility, for I have had most striking results of conception following its cure. I have already said that, however slight, vaginal discharge may be toxic as regards spermatozoa, and therefore immediate treatment ought to be undertaken. Sometimes simple saline douching once or twice daily may be sufficient for its cure, and conception may follow. If the amount of discharge is considerable or very unhealthy, and treatment does not relieve it, while the patient objects to any operation, a course of waters and treatment at Franzensbad, Spa, Marienbad, Spa Plombières, Ems, Schwalbach, St. Moritz, Gastein, and other places abroad, or certain watering places in this country may be resorted to. In some cases it is remarkable the effect they have, and there can be no doubt that they act in the first place on the mucous membrane of the vagina, curing discharge and increasing circulation and nutrition of the uterus; and, secondly, by the life and surroundings, on the general health. It is often of the greatest service to direct attention to the general health of the patient, and my belief is that when it is improved it has some important influence on ovulation. We know that some women conceive when they are in a most indifferent state of health, so that we cannot say that when the general health is lowered in tone there is little likelihood of conception. But it is a fact that often when nothing definite can be discovered in the pelvic organs to account for sterility a sojourn abroad in some high mountainous region, with or without a course of waters, improves the health and conception follows. Sometimes it is a distinct advantage to let the wife go away alone. I have been struck with the fact that in certain cases where I have been able to discover nothing wrong with the pelvis, and where I have put down the sterility to profluvium seminis, a sojourn abroad has been followed by conception. This peculiar condition has sometimes appeared to me to come on when the woman is rather lowered in tone, for I have noticed that it has passed

away on the improvement of the general condition, although I am bound to say that this has not always been the case, and in certain patients the condition has persisted. In many cases there is a certain amount of neurasthenia, and a prolonged course of phosphates or glycerophosphates is of great value.

Before passing from medical treatment I must refer to organo-therapy, which occasionally seems to be of great benefit. I frequently order ovarian extract if the sterility seems to be associated with irregular menstruation or amenorrhœa. Hans Bab[17] proposes to supplement this treatment with johimbine hydrochloride, which has been thoroughly tested, and is without danger when given in proper doses. He states that in the promotion of hyperæmia no physical measure can compare with this preparation. The action of this combination in the treatment of sterility he considers can be supplemented still in a further direction by the addition of lecithin. This is a highly important constituent in the organism, apart from the brain and nerves, and is found in abundance in the blood corpuscles, the semen, the vitellum, the placenta, the fœtal cells, and the milk.

Before dealing surgically with cases of sterility it is well to have a general rule to be guided by as to time in those recently married, and the question must be asked, "When may a marriage be described as sterile?" Torkel and various authors consider that the answer is from one to five years, according as it is congenital or acquired. After the fortieth year only one thirty-ninth of all women become pregnant. Even with a pin-hole os there is no need to hurry into operation. I usually allow at least 18 months to pass before thinking of operating unless there is some special reason against this course. But supposing a reasonable time has elapsed since marriage, and there has been no suspicion of conception, then operation by thoroughly dilating the cervix may be contemplated in the presence of a pin-hole os, a small conical cervix, or any condition of the cervix which leads one to think that it may be the cause of difficulty in the entrance of the spermatozoa. I have already said that I do not believe that any amount of contraction will prevent the entrance of spermatozoa; nevertheless, it is a fact that frequently, after thoroughly dilating the cervix, conception may immediately occur. There need be no hesitation about operating if dysmenorrhœa be present, for the dilatation of the cervix will probably cure the pain, even if it is not followed by conception. Thorough dilatation of the cervix is usually most effective. As long ago as 1826 Dr. John Mackintosh, lecturing on the practice of physic in Edinburgh, advocated it,[18] and subsequently published cases showing that barren women conceived after dilatation. In 1881 Dr. Godson read a paper at the Obstetrical Society bringing forward cases where thorough dilatation of the cervical canal was followed by conception. Professor Pozzi[19] describes an operation, "commissural evidement," which consists of bilateral discission of the cervix in lengths of 2 and 3 centimetres, dilatation of the cervical canal, curettage, and stomatoplasty, which has for its object the uniting of the internal cervical with the external cervical mucous membrane. This is certainly a more elegant operation than that of Sims's, who allowed these cut edges to heal freely. Professsor Pozzi says that in more than 25 per cent. of his cases pregnancy followed the operation, and that in some cases the patients had been married from 5 to 16 years, impregnation following the operation in a few months.

My belief is that with reference to surgical treatment soon after marriage for the purpose of impregnation, thorough dilatation of the cervix by graduated dilators is sufficient, but, of course, the patency does not remain long, and doubtless any such operation as that of Pozzi's will secure that patency for a more lengthened period. It must be remembered that any operation of this kind must be undertaken with the strictest aseptic and antiseptic precautions, for all operations about the cervix without proper attention to these details may be followed by metritis or parametritis. In days bygone, when those operations were performed with no precautions whatever, catastrophes were frequent. It is of great importance in performing this operation that the dilators should be slowly introduced, enough time being allowed for each dilator to do its work before another is inserted. This prevents the splitting of the mucous membrane of the cervical canal, which, when it occurs, if thorough antiseptic and aseptic precautions be not taken, may lead to danger.

I have already spoken of curetting in cases demanding it, but I would here give a word of caution against repeating the operation unnecessarily. It undoubtedly removes the delicate mucous membrane from the cervix, and if repeated curettings take place the epithelium will not grow again, or grows imperfectly. After curetting, the endometrium is reproduced in about two months. If acted on by strong acids and other escharotics, resulting in sloughing, the endometrium is but imperfectly reformed, even after several months.[20] Thorough dilatation secures free drainage from the uterine cavity, so that, should the endometrium be affected, all discharge can more easily escape. In certain cases of operation for chronic salpingitis, where one or both tubes are to be removed, the method now adopted by some is to remove the distal part of the tube, then split open longitudinally the remaining stump, and secure its patency by suturing the peritoneum to the mucous membrane of the tube. The diseased part of the ovary is dissected away and the remaining healthy parts secured together and anchored as near as possible to the stump of the tube. Unless future pregnancy is quite out of the question, it is important to preserve as much as possible of the fimbriated extremity of the Fallopian tube when it is found to be partially diseased. Severe infection of the tube generally destroys the fimbriated extremity, but infection in a lessened degree may only cause a small portion of the ampulla to be involved and none of the fimbriæ. Under these circumstances it is advisable to remove only the affected part, and to unite the fimbriated extremity to the portion of the tube which is left behind. In the case of ectopic gestation the opposite tube may be closed by lymph resulting from inflammatory disturbance which affects both sides, so that the woman may be sterile unless something be done at the time of operating. If the whole tube can be saved, and the product of conception removed, this may be considered with a view to future pregnancies. But it is right to point out that pregnancy can occur through the opposite tube, and some consider that it is wiser to remove a tube which has already undergone certain destructive changes.[21] It must be remembered that the epithelium is certain to be destroyed, and that there is therefore a risk, if the tube is left, of another ectopic gestation occurring. At any rate, the whole of the affected portion of the tube should be removed at the operation, and the end of the tube, if healthy, left, taking care to render it patent by suturing the inner and outer coats.

Cases of persistent retroflexion of the body of the uterus, giving rise to local symptoms, may be treated in the ordinary manner, but surgical interference ought not to be recommended with the view of curing sterility unless those symptoms are urgent. There are certain cases of retroflexion which are associated with conception where the ovum is invariably lost, and where the patient does not go to the term until the flexion is cured If this cannot be done in the ordinary manner, the question of surgical interference may be entertained by externally shortening the round ligaments, or by the intra-abdominal shortening of the round and broad ligaments described by Bissell in 1891,[22] or any other method preferred by the operator, except abdominal fixation in the young.

In some cases a healthy portion of a diseased ovary may be transplanted into the body of the uterus near the split oviduct. The object of this is that ovulation will occur in the immediate vicinity of the cilia of the tube. But if the ovary is completely surrounded by the uterine tissue the matured ova cannot escape, and fecundation is therefore impossible. Lately transplantation of the ovarian substance from one patient to another has been successfully accomplished by Dr. Robert Morris.[23] In some cases where peritonitis has been set up and the ovaries are covered with adhesions it may be sufficient to thoroughly set these free for conception to follow.

Before leaving the surgical treatment of sterility I must

[17] Hans Bab: Ein Vorschlag zur medicamentöser Therapie der infantilischen Sterilität Zemeral blatt Gynäkologie, 1909, vol. xxxiii., p. 1558.

[18] Mackintosh (John): Principles and Practice of Physic, vol. ii., p. 431.

[19] Pozzi: Treatment of Dysmenorrhœa and Sterility in Women, American Gynæcological Society, American Journal of Obstetrics, 1909, vol. lix., p. 1027.

[20] Douglas Bissell: Sterility and its Surgical Treatment, American Journal of Obstetrics, 1906, vol. lxv., p. 169.

[21] Op. cit.

[22] Op. cit.

[23] Douglas Bissell: Op. cit.

mention the important bearing of a severely lacerated cervix on one-child sterility and the necessity of perfect repair. In these cases there is usually a considerable amount of discharge, because the lining membrane of the cervix is exposed to the noxious influences of the vagina, keeping up a chronic catarrhal condition, which continued local treatment will not cure, while the discharge has a toxic influence on the spermatozoa. Even if pregnancy does take place abortion occurs early on account of the loss of the sphincter action of the cervix. By the careful repair of the laceration, combined with curetting, the catarrhal condition is cured and conception occurs.

Some advocate the use of electricity in the treatment of sterility.[24] I have had no experience in its use with reference to this, but some years ago I used it in hospital practice when Apostoli brought forward the treatment of fibroid tumours by electricity. Undoubtedly it cures endometritis and endocervicitis, but after careful trial I gave it up, considering that the time spent over its application was too great, when a curetting could cure the patient rapidly. Professor Pinard considers that static electricity frequently gives good results and may be recommended.[25]

In conclusion, I would say that undoubtedly within the past years sterility in women is no longer looked upon as a hopeless affliction, because the etiology in many cases is better understood, and therefore directs us as to the treatment. If we feel that there is no apparent reason why the wife should not conceive, or if we have placed her, by removing pathological conditions, in the best and healthiest condition for conception without result, then we must turn our attention to the husband, and hand him over to a bacteriologist or genito-urinary specialist. There can be no doubt about the gonococcus being responsible for much, but it is useless to endeavour to make it responsible for nearly all. Fortunately, it can be combated now in a manner never dreamt of in former days by vaccine-therapy, and pathological conditions removed by this modern treatment. In like manner it is right to draw your attention to the fact that certain continuous vaginal discharges, apart from that caused by the gonococcus, which cannot be cured by douching, may yield to vaccine treatment if the organism causing that discharge be separated, cultivated, and a vaccine made therefrom. The modern internal treatment by organo-therapy requires most careful consideration and much more experience before statistics of real value can be tabulated. In my own experience I have had such success by curing ordinary vaginal discharges, conception following thereon, that I have been most seriously impressed by the fact that apparently simple discharge may contain much toxic material which can act on the protoplasm of the spermatozoa. If any discharge exists it must be cured, and if it does not yield to ordinary treatment thorough curetting may be advised, or, if this will not be entertained, a course of waters at one of the places already mentioned may be of the greatest service.

I cannot close, Gentlemen, without saying that there are certain cases which will come before you wherein you can discover no cause for sterility, and which will prove to you our ignorance still on this most mysterious and interesting subject of conception, and the necessity for continual research into the functions of the ovary and the biochemic influence of the spermatozoa and ova.

[24] Talmey (B. G.): Notes of Sterility in Women, Medical Record, 1908, vol. lxxxvi., p. 316.
[25] Pinard: Stérilité ce' que le medecin doit savoir et faire pour le traiter, Revue de Gynecologie et de Chir. Abdom., 1906, vol. x., pp. 387-95.

DONATIONS AND BEQUESTS.—The late Mr. John Birkmyre of Kilmacolm, Renfrewshire, has, by his will dated Sept. 23rd, 1909, left £5000 to the trustees of the Broadstone Jubilee Hospital, Port Glasgow, to be held by them for the purposes of the endowment fund of the hospital.—Miss Jane Mulligan of Kingston, Dublin, who died on April 29th last, and whose will has just been proved, left the following legacies, all subject to the life interest of her brother, John Mulligan, in the revenue arising from the revenues so bequeathed: £1000 to the National Maternity Hospital, Holles-street, Dublin; £300 to Jervis-street Hospital, Dublin; £300 to St. Vincent's Hospital, Stephen's-green, Dublin; £200 to the Children's Hospital, Temple-street, Dublin; £1000 to Sisters of Mercy, Beaumont Convalescent Home, Drumcondra, and the residue of her property to the same.

A REPORT ON TWENTY CASES TREATED WITH EHRLICH'S SPECIFIC FOR SYPHILIS.

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FOR the past few years Ehrlich has entirely devoted his time to chemotherapy, with a view of discovering a drug which, on the one hand, would kill the organisms in protozoal diseases, and, on the other, be non-toxic in that dose which would bring about their complete destruction. As the result of animal experiments, arsenophenylglyzin was found to fulfil these conditions in trypanosomiasis and Hata's preparation in those diseases caused by spirilla. Before atoxyl and arsacetin were put upon the market Ehrlich recognised that there would be a certain percentage of patients who would show some idiosyncrasy to these preparations, since there are some people who are naturally sensitive to arsenic. This was the greatest difficulty which Ehrlich had to contend with, but one which he easily overcame; the disastrous results which have been reported from the use of both atoxyl and arsacetin could have been avoided if Ehrlich's advice had been followed. Ehrlich has been blamed for allowing such dangerous drugs to be used by anyone, consequently there has been the very greatest difficulty, and rightly so, too, in obtaining any of the new preparation, which bids well to revolutionise the present treatment of syphilis. Owing to the extreme kindness of Geheimrat Professor Ehrlich I have been presented with some of this preparation for trial at the London Lock Hospital, the following being the report upon 20 treated cases.

When the action of a new drug is to be tested the patient must first and foremost be in bed, a pulse and temperature chart strictly kept, and every means taken to ascertain whether the patient has any complications, such as inflammation or degeneration of the liver and kidneys, and if, as in this case, when we are dealing with an arsenic preparation, whether he has previously had either an injection of the same or of some other organic arsenical compound, since a previous injection may make the patient more sensitive to the action of a second, and so produce anaphylaxis. To test for this over-sensitiveness to arsenic either a conjunctival reaction after Calmette or a cutaneous reaction after von Pirquet should be undertaken with the drug in the strength it is intended to be used, or with a solution of arsacetin 0·3 gramme in 3 cubic centimetres of water, and those giving a positive result regarded as unsuitable for the treatment.

Up to the present therapeutic treatment has been intermittent, that is, a drug, recognised as a specific for a certain disease—mercury in syphilis—had to be given at regular intervals if the disease was to be cured. The new form of therapy, on the other hand, the *Therapia magna sterilisans*, is to kill the organisms in from 1 to 2 days and prevent any recurrences. This forms the basis of Ehrlich's aim, and his goal is said to be reached by a drug which goes by the name of dioxydiamidoarsenobenzol, or Ehrlich-Hata's preparation No. 606. It is in the form of a yellow powder hermetically sealed in glass phials, the dose ranging from 0·3 to 0·6 gramme; it is only stable as a bichloride; but since it must not be injected in the double salt form, it is converted into a mono- or a bi-sodium salt by the addition of sodium hydrate just before use, which, being unstable, must invariably be employed fresh. The injection can be used either intramuscularly or intravenously.

Intramuscular injections.—The excess of sodium hydrate can be neutralised or not; if it is neutralised the pain is not nearly so severe, but an emulsion is formed which is not always very fine; consequently, unless a big needle is used—a needle for pleural effusion—it may be impossible to inject it. Whether the injection be neutralised or not, the whole success, to my mind, rests in dissolving the powder first of all in as small a quantity as possible of ethyl alcohol—not methyl alcohol as has been advocated, since unless absolutely chemically pure this may give rise to unpleasant symptoms, which would naturally be ascribed to the arsenic. Having dissolved the powder in alcohol, ½ cubic centimetre of alcohol to 0·1 gramme of powder, 20 cubic centimetres of ordinary sterile water are added and the mixture is thoroughly pounded in a mortar until every trace has dissolved, and then add slowly, mixing thoroughly awhile, 1 cubic centimetre of decinormal sodium hydrate

solution to 0·1 gramme of powder, and inject equal quantities into each buttock. The pain complained of just after the injection is due to the bulk of the injection used, but the pain which comes on a few hours later is largely due to the action of the caustic, sodium hydrate, on the tissues. The pain simulates bad sciatica, and often does not wear off for ten days or a fortnight. If the solution is neutralised the pain is very considerably diminished, and it does not detract from the drug's action, as had been anticipated.

As before, treat with absolute alcohol and dissolve in 10 cubic centimetres of very hot water; then add 1 cubic centimetre of normal sodium hydrate solution (40 grammes to the litre) for every 1/10th of a gramme of powder used; mix well in a mortar and add three drops of a ½ per cent. alcoholic solution of phenolphthalein and titrate with normal acetic acid (60 grammes to the litre) until the red colour has completely disappeared, and finally add a few drops of normal sodium hydrate until a faint rose tint comes back to remain, so that the solution is just alkaline. Inject half the quantity of the emulsion into each buttock. Although the steps taken are the same in every case, sometimes little hard lumps form in the emulsion which block up the needle and make the injection very difficult. Even with the difficulty of injection the pain is so much less and the results are so equally satisfactory that I prefer to neutralise my solution—in any case, the pain is less in females than males. The urine must be tested in every case before injection and daily afterwards, so long as the patient is in the hospital. A Wassermann reaction should also be taken before the injection and weekly afterwards with a view of ascertaining whether the treatment has the power of converting a positive into a negative reaction. Needless to say, the strictest antiseptic precautions should be taken and the needle boiled in salad oil, to prevent the blunting which occurs with water. The patient should lie on his front and the emulsion be injected only when the muscles are lax and as slowly and evenly as possible.

Intravenous injections.—I have had no experience of this method, since Professor Ehrlich asked me to employ only the intramuscular route, but from foreign reports the intravenous injection seems to act quicker on the lesions, the patients suffer no pain, and there is never a rise of temperature. For intravenous injections two solutions are prepared, well shaken, and mixed immediately before use. Solution A: 0·5 gramme of the substance is dissolved in 3 cubic centimetres of glycol. Solution B is a mixture of 240 cubic centimetres of normal saline solution with 10·3 cubic centimetres of n/5 sodium hydrate (8 grammes to the litre). Iversen used this drug intravenously with success in cases of relapsing fever, the organisms being killed in 24 hours, and obtained better results than could be obtained with intramuscular injections. Since many of my cases are repetitions I shall pick out those best illustrating the results obtained.

CASE 1.—A man, aged 35 years, came up on July 26th with a sore on the penis, which he had had for three weeks; bar enlargement of the inguinal glands there were no secondary symptoms. Spirochæta examination positive; Wassermann's reaction negative. On July 27th the patient received an injection of 0·45 gramme. After 24 hours the chancre showed marked signs of healing, no spirochætæ were demonstrable, and within four days the sore had become completely covered with epithelium. At the time of writing Wassermann's reaction is still negative and no further symptoms have developed.

CASE 2.—A girl, aged 15 years, developed the usual signs of congenital syphilis soon after birth; the mother having acquired the disease two years before. Later, the child had double interstitial keratitis, which disappeared under treatment, to be followed by cutaneous gummata over the left thigh and leg, which had resisted prolonged oral administration of mercury. The gumma on the thigh was deep, circular, and about 2½ inches in diameter; on the anterior surface of the tibia were multiple sores, the base of some reaching as far as the periosteum and bone; there was a great deal of evil-smelling discharge, and it was almost impossible to keep the ulcers clean. The patient gave a negative arsacetin reaction, and was consequently injected with 0·3 gramme of the powder in an emulsion. Except for a little pain and a rise of temperature to 100° F., which lasted till the next day, the patient suffered no inconvenience. On the second day the ulcers already showed signs of healing, and within ten days they had completely healed, no other treatment having been added. The patient also says she feels very much better. The Wassermann's reaction is still positive. I am indebted to Mr. Elmslie for his kindness in allowing me to inject this patient.

CASE 3.—A female, aged 49 years, came up to the West London Hospital complaining of a rash and weakness of, and inability to use, the left arm. The patient acquired syphilis at the age of 19, for which she was treated on and off for two years; 10 years ago a serpiginous syphilide arose on the left arm, lasted two years, and disappeared ultimately under treatment. As soon as this had disappeared a similar lesion developed on the other arm, and had been slowly increasing up to the time of admission, when the diameters of the lesion were 5 × 3. At the commencement of July she complained of weakness in the left shoulder and wrist, and her fingers felt numbed. On admission the patient could not raise her arm above her shoulder, could not lift up anything, and had practically no grip. On giving a negative arsacetin reaction she received on July 30th 0·48 gramme. Next day there was considerable pain and the temperature rose to 99·2° F. No albumin. On August 1st the pain had increased somewhat and the right buttock appeared swollen and œdematous, and the temperature had risen to 101°; the same day she noticed that she was regaining power in her left arm and the syphilide was also showing signs of fading. On August 2nd the swelling of the buttock completely disappeared, the temperature returned to normal, and the pain was very much less. On the 4th there was a slight trace of albumin in the urine. On the 8th the albumin had completely disappeared, the power in the left arm was almost as good as the right, and the skin lesion was scarcely perceptible; further, the patient said of her own accord that she had not felt so well for years, and that the "heaviness" over the heart and chest had completely gone. Unfortunately, the Wassermann's reaction before injection was autotropic, and ten days after injection slightly positive; tested again August 25th, it was negative. I am indebted to Dr. Abraham and Mr. J. G. Pardoe for so kindly allowing me to treat this patient.

CASE 4.—A male, aged 41 years, was admitted into the Lock Hospital with a large ulcerating chancre of the prepuce, polyadenitis, sore-throat, nocturnal headaches, a macular rash, and gonorrhœa. Wassermann's reaction was positive. The patient received 0·45 gramme and within 48 hours the headaches had gone, the throat was normal, the rash was fading, and the chancre had begun to cicatrise. In five days the rash had completely disappeared, and within ten days the sore had not only healed, but the induration, which was so marked at first, was scarcely palpable. August 25th, Wassermann's reaction negative.

CASE 5.—A male, aged 33 years, who had acquired syphilis in 1905, came up to the Lock Hospital first in October, 1908, having only had six months' pill treatment, suffering from perforation of the palate, gummatous ulceration of both legs, and gumma of the left testicle, which finally ulcerated through the scrotum. January, 1907, fresh ulceration of the palate. February, 1907, fresh ulceration of the scrotum. May, 1908, ulceration of the nose; patient admitted into hospital for a month. February, 1909, fresh ulceration of nose. December, 1909, ulceration of nose had spread to cause necrosis, and in January, 1910, some dead bone was removed and the patient received some injections of orsudan—*in toto*, 10 grains. The ulceration having spread to the pharynx the patient was readmitted and injected with 0·45 gramme of No. 606. The patient had been almost continuously under mercurial treatment—inunctions, injections, and pills—since the commencement of 1907 without in any way checking the further progress of the disease. The patient suffered considerable pain in his legs after the injection, and on the third day a large red and painful swelling appeared covering most of the right buttock. I had visions of an abscess, but owing to the wide distribution and not being able to obtain any fluctuation I thought the swelling might be a local toxic œdema; after a few applications of lotio plumbi it quickly disappeared. Eight days after the injection the patient was able to walk about, the nose had diminished to about half its size, the redness had almost disappeared, and the ulcers were completely cicatrised over; the discharge from both the nose and pharynx had ceased, and both looked just as if they had been healed for months; naturally, the perforation of the palate had not diminished in size. As in the case before, no local treatment was adopted, not even an antiseptic wash or gargle. A fortnight after the injection the patient was very pleased with himself and informed me that his friends scarcely recognised him. August 25th, Wassermann's reaction negative.

CASE 6.—A male, aged 28 years, contracted syphilis in August, 1908, and commenced treatment with pills in September, by which time the secondaries had fully developed. The patient continued with his treatment until July of this year, when he was admitted with ulceration of the nose, fissuring of the tongue, elephantiasis and ulceration of the lower lip, and gummatous ulcers on both shins. The patient received 0·45 gramme and two days later the nose was no longer red, the ulcers began to heal, and on the third day the lip had reached its normal size, and within 14 days every ulcer had completely healed and my notes say: "Patient is delighted, observes himself constantly, and feels quite sure that the redness of the keloids, which had developed on his old papulo-pustular lesions, was much fainter." Wassermann's reaction three weeks after the injection had become negative.

CASE 7.—A man, aged 26 years, was infected middle of May, 1910, but owing to a very severe iritis of the right eye Dr. Huey sent him up to the Lock Hospital for admission. The patient had a chancre on the frænum and corona, a polyadenitis, a papular rash on the trunk and thighs, nocturnal headaches, ulceration of the left tonsil and iritis (the photophobia was too intense to allow of a proper examination). 0·45 gramme was injected, and on the following day the patient was able to dispense with his eye-shield, and within four days anyone examining the eye for the first time would have diagnosed a slight conjunctivitis, the pupil was circular, reacted normally, and there were no synechiæ; before ten days were over the other symptoms had practically disappeared. At no time did the patient receive any local treatment. August 25th, Wassermann's reaction positive only with the barium prepared serum.

CASES 8 AND 9.—I had two uncomplicated cases of secondary syphilis which showed little or no improvement after an injection of 0·3 gramme. N.B.—Symptoms have since disappeared.

It appears from the few cases I have up till the present treated that the earlier the syphilis the larger the dose required (0·45 to 0·6 gramme), and that 0·3 gramme is ample in the late stages (see case of congenital syphilis). Wechselmann reports a case where, after an injection of a small dose, the rash became more profuse. This is analogous to the Jarisch-Herxheimer's sign. Should this occur with No. 606, the dose has been too small, and a few cases have been published where a second injection was given without any unpleasant complications arising. In my cases it was the general rule for the temperature to rise to 100° F. on the night of the injection, to become normal after 48 hours; sometimes the fever persisted to the third day, but

only in those cases which had some toxic œdema. In only one case was any albumin found after injection, and in this case it was transient.

In almost every case an induration can be felt in both buttocks, probably due to a fibrosis caused by the caustic action of the sodium hydrate; whether the induration will ever disappear time alone will show; at any rate, it causes the patient no inconvenience. I intend to do a Wassermann's reaction regularly on every patient, and although the drug already seems to have some action on changing the reaction, not sufficient time has elapsed to allow a definite statement being made. Beyond the improvement observed by the naked eye, I was very much struck by the extraordinary change for the better in almost every patient's general condition; they not only appeared brighter, but felt ever so much better and put on weight; this alone is a great achievement, since there is scarcely a patient that does not become depressed, anæmic, and lose weight under mercurial treatment.

It seems that the severer the case the quicker the action; anyhow, the results so far obtained reach far beyond one's expectation. A few cases of recurrence of symptoms have occurred; what the percentage of such cases is and how much they are dependent on too small doses having been given, one cannot at present give an opinion. It remains also an open question whether the injection can be repeated and have the same action or not, since from the theoretical and animal experiments Ehrlich is rather inclined to the view that after a single injection the spirochætæ become immune to arsenic (arsenfest) It is likewise yet impossible to say whether treatment will have to be augmented with mercury, and years may have to elapse before the last word on this wonderful remedy can be said. The greatest proof we have of the non-toxicity of this drug is the fact that healthy animals behave quite indifferently to an injection, and that it requires 0·1 gramme per kilo to kill an animal, which would in a man be equivalent to about 7 grammes; this being the case we shall no doubt hear of larger doses being used with impunity. On Ehrlich being asked when the drug was going to be put on the market, his answer was "Not until I have authentic reports of between 20,000 and 30,000 injections." We know that every new invention has its loop-holes, so we must work quietly and critically in order to be able to state what are the indications and contra-indications for treatment. There is no doubt that by Ehrlich's genius the greatest victory over syphilis has been gained, and since the battle was fought with scientific and experimental weapons we at least know that we are on the right road to find an absolute cure for a disease which is a curse to mankind.

My warmest thanks are due not only to Professor Ehrlich but to Mr. Ernest Lane, without whose valuable assistance it would have been impossible to have treated so many cases. Mr. Lane not only allowed me to use some beds at the Lock Hospital but was good enough to inject some cases himself which he considered suitable. I am also indebted to my house surgeon, Mr. Forster, for the careful notes he has kept of the cases.

Harley-street, W.

ON THE

INFLUENCE OF THE NEW EHRLICH PREPARATION, DIOXYDIAMIDOARSENOBENZOL ("606"), ON RECURRENT FEVER IN RATS.*

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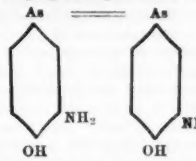
ONCE more has the great genius of Ehrlich startled the scientific world with the discovery of a new therapeutic agent—namely, dioxydiamidoarsenobenzol, or, as it is more popularly called, "606." In a recent paper Hata[2] clearly sets forth the great value of the new remedy as an absolute cure for such experimental spirochætoses as syphilis, spirillose of fowls, and recurrent fever. The fact that in contra-distinction to most arsenical preparations the therapeutic dose of this new medicament is a small fraction of the toxic one must ensure a great future for the remedy. In human syphilis a single injection is sufficient, according to Alt,[1] Neisser,[6] Schreiber and Hoppe,[7] and others, to effect a complete cure and to cause the Wassermann reaction to disappear in a few weeks' time, and our own observations in this direction seem, as far as we have gone, to be giving results in agreement with this. The equally striking results obtained by Iversen[3] in cases of relapsing fever (Spirochæta obermeieri) in man, where a single injection not only causes a complete disappearance of the parasites from the blood, but prevents any relapses occurring, stamp the medicament as a specific remedy for this disease.

The new therapeutic agent is the outcome of painstaking researches on the part of Ehrlich and his co-worker, Dr. Bertheim. Dioxydiamidoarsenobenzol is a substitution reduction-product of atoxyl obtained by transposing the radicles in different positions of the side-chains of the benzene nucleus. The aim of these investigators was to obtain a substance which, though still possessing a maximum destructive effect on the parasites, had little or no injurious effects on the host's organs. In other words, they aimed at obtaining a remedy which was *parasitotrop* in the highest degree without being *organotrop*. This property allows the use of a large quantity of the substance at one time, so that the remedy is eminently suited for use according to Ehrlich's *therapia magna sterilisans*, which is now recognised as the most efficient method of treating protozoal infections. The protozoa are thus destroyed before they have a chance of developing an immunity to the medicament. The formula of "606" is represented graphically as follows:—



The treatment of relapsing fever in man and in animals has up to now met with very little success. In a series of experiments made on recurrent fever some years ago[8] I obtained practically the same results as Vassal[5]—namely, that the benzidine colour "a" of Nicole and Mesnil was alone capable of causing a complete disappearances of the spirochætes from the blood, atoxyl and its derivatives and certain of the basic triphenylmethane dyes having little or no influence on the infection. The results obtained in the treatment of infection in the human subject have also been unsuccessful.

The present research was undertaken with the idea of investigating the actual value of this new remedy as a curative agent in an infection provoked by the Spirochæta obermeieri in rats, and of ascertaining to what extent the remedy was harmful to the animal organism. I am indebted to Professor Ehrlich's kindness for the dioxydiamidoarsenobenzol employed in the research.

In the experiments rats were used in every instance, and the weight of the animals employed was in each case as near 100 grammes as possible. As a general rule 0·005 gramme of "606" for a rat of 100 grammes (i.e., 0·05 gramme per kilogramme of animal) was found to be the most suitable amount as a curative dose; with this quantity no bad effects were observed. The medicament was always given subcutaneously after it was made up in the manner advised by Alt (loc. cit.). The required amount, 0·005 gramme, is weighed and transferred to a test-tube; a few drops of methyl alcohol are added to dissolve the preparation and then 1 c.c. of normal saline solution. The solution, which is strongly acid, is neutralised with a normal solution of sodium hydrate; a slight excess of sodium hydrate is then added till the precipitate which has been formed is nearly all dissolved. The resulting slightly opaque solution is now ready for use.

Influence on the Infection.

Curative action.—When a rat, whose blood contains a considerable number of spirochætes, is given a therapeutic dose of dioxydiamidoarsenobenzol, no diminution in the number of parasites is observed till some six hours later. The spirochætes then gradually disappear from the circulation, and in 18 to 24 hours have completely disappeared. In every case treated the same result was observed, whether it

* The superior figures refer to the bibliography at the end of the article.

was the first, second, or third day of the infection, and in no instance did a relapse occur in any of the treated animals. Experiment I. gives a good idea of the efficient action of "606" on the disease.

Experiment I.—Four rats were inoculated intraperitoneally with 0·2 c.c. of rat's blood containing a considerable number of Spirochæta obermeieri. One rat was given 0·005 gramme of dioxydiamidoarsenobenzol 24 hours later; another rat the same dose 48 hours later; and a third rat was given it 72 hours later; that is, the rats were treated on the first, second, and third days of the disease respectively, the fourth rat being the control. At the time the injection of the remedy was given there were numerous spirochætes in the animals' blood. The following table will explain the results obtained:—

TABLE I.

Rat.	May 7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
1	0·2 c.c. virus.	+*	0	0	0	0	0	0	0	0
2	,,	+	++*	0	0	0	0	0	0	0
3	,,	+	++	++++*	0	0	0	0	0	0
4	,,	+	++	++++	++++	dead.	0	0	0	0

+'s = proportional to the number of spirochætes in the blood.
* = received 0·005 gramme "606."

Dioxydiamidoarsenobenzol may therefore be said to produce an artificial crisis which is similar to the crisis which occurs normally at the end of the infection. This is also the case with atoxyl in the spirillose of fowls. During this artificially produced crisis an elaboration of a certain quantity of immune substances takes place, apparently in no way dependent on which day of the disease the medicament is given, but whether in greater or less amount than occurs naturally it is difficult to say. The actual demonstration of the immune bodies at this period is not easy, as the quantity elaborated in the short time must be small, but, nevertheless, lysines and specific fixers can be demonstrated very soon after the crisis has taken place. The following experiment shows this clearly.

Experiment II.—Four rats were each inoculated with 0·2 c.c. of rat's blood containing numerous Spirochæta obermeieri. Two days later all the rats except one (control rat) were given an injection of 0·005 gramme of "606" subcutaneously. These three rats were then killed at intervals of 24 hours, the first being killed 24 hours after the injection of the remedy, the second 48 hours after it, and the third 72 hours after it. In these the serum was examined at the crisis, 24 hours after it, and then 48 hours after it. Table II. shows how the experiment was carried out.

TABLE II.

Rat.	June 20th	21st	22nd	23rd	24th	25th	26th
1	0·2 c.c. virus.	+	+++*	0 S	—	—	—
2	,,	+	+++*	0	S	—	—
3	,,	+	+++*	0	0	S	—
4	,,	+	+++	++++	++++	0	0

* = 0·005 gramme "606."

The sera of those rats in which this artificial crisis was produced were examined first for specific lysines. In a series of test-tubes were placed 0·5 c.c. of dilutions of the serum (1-5th, 1-10th, 1-20th, and 1-100th) obtained at the crisis, 24 hours after it and 48 hours after it. The dilutions were made in normal guinea-pig complement (1 in 15 normal saline solution). To each tube was added 0·1 c.c. of a mixture of rat's blood containing a large number of spirochætes and normal saline. After the tubes had been shaken they were kept at 37° C. They were examined after the lapse of half an hour and again one and half hours later. In the first two dilutions complete lysis occurred as regards each of the three sera, while no change was observed in the control tubes. In the higher dilutions the spirochætes were degenerate and presented the characteristic bulbous degeneration. This observation indicates that specific lysines are elaborated after the injection of "606."

Much the same result was obtained by the fixation of the alexine reaction, as specific complement-fixing bodies were present in considerable amount 24 hours and 48 hours after the crisis had been artificially produced. Complete fixation of the alexine was observed with 0·1 c.c. of the rat's serum, when 0·3 c.c. of a suspension of Spirochæta obermeieri was used as antigen. This suspension was made by centrifuging rat's blood in which large numbers of spirochætes were present. The schema employed was as follows:—

TABLE III.

—	Serum.	Antigen.	Complement, 50 per cent.		Result.
Day of crisis	0·1	0·3	0·1	2 hours at 37° C.	++++
	0·1	—	0·1		0
24 hours after crisis ...	0·1	0·3	0·1		++++
	0·1	—	0·1		0
48 hours after crisis ...	0·1	0·3	0·1		++++
	0·1	—	0·1		0
Normal rat	0·1	0·3	0·1		0
	0·1	—	0·1		0
	—	0·3	0·1		0

++++ = complete fixation of complement.

Rats which have been cured with the dioxydiamidoarsenobenzol, whether on the first, second, third, or fourth day of the disease, develop a complete immunity against re-inoculation. What the durability of this immunity will prove to be cannot be told for some time yet, but no doubt this condition must last several months at least. The blood of those rats in whom this artificial crisis has been produced is infective for another rat at least 24 hours after the crisis has occurred, so that by this time a complete destruction of all the spirochætes has not occurred, though it may appear to have done so when the microscope alone is used as a test.

Preventive action.—The preventive action of most chemotherapeutic remedies is small, a fact which may be explained by the rapidity with which these substances are either fixed by some of the internal organs or secreted from the organism. Dioxydiamidoarsenobenzol is no exception to this, though it certainly has a more powerful preventive action than has atoxyl in the case of spirillose of fowls. When a curative dose of "606" is given at the same time as 0·2 c.c. of the virus no disease follows, but if the virus is given 24 hours or more after the injection of the "606" an infection always follows in which the incubation period may or may not be lengthened, as is seen in Table IV.

An experiment was also made to ascertain whether "606" had really a true or only an apparent preventive action when given at the same time as the virus. With this aim in view

TABLE IV.

Rat	May 7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st
1	×	Virus, 0·2 c.c.	0	0	0	0	0	0	0	0	+	+++	++++	++++	0
2	—	,, ×	0	0	0	0	0	0	0	0	0	0	0	0	0
3	—	,,	+	++	++++	—	0	0	0	0	0	0	0	0	Control

× = 0·005 gramme "606."

three rats, along with a control animal, received 0·2 c.c. of virus, and then 0·005 gramme of "606." One rat was killed 24 hours later, another 48 hours later, and the third 72 hours later. The blood of each rat, after having been defibrinated, was injected into the peritoneal cavity of a normal rat. The rat which received the 24 hours' blood alone developed the disease after a somewhat lengthened incubation period. Tables V. and VI. explain the experiment.

TABLE V.

Rat	June 28	29	30	July 1	2	3	—
1	0·2 c.c. Virus + "606"	0 S	—	—	—	—	
2	,,	0	S	—	—	—	
3	,,	0	0	S	—	—	
4	Virus	+	++	+++	++++	0	0 Control

TABLE VI.

Rat	June 29th	30th	July 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
A	Blood of Rat 1		0	0	0	0	0	+	+++	++++	0	0
B	—	Blood of Rat 2	0	0	0	0	0	0	0	0	0	0
C	—	—	Blood of Rat 3	0	0	0	0	0	0	0	0	0

This experiment suggests that a slight general infection which is not apparent to the microscope does occur when the virus is given at the same time as the dioxydiamidoarsenobenzol. This infection must, however, be very slight, as 24 hours later the blood is not infectious. The destruction of the spirochætes by the specific is therefore not complete till more than 24 hours afterwards. This result is certainly much better than what has been achieved by any of the other chemo-therapeutic substances in protozoal infections. Previously to the discovery of "606," atoxyl was considered to be the most efficient remedy for the spirillose of fowls; yet, after a curative dose of atoxyl in that infection, spirochætæ can be demonstrated in the blood for three days.[4]

Rats which have received an injection of "606" at the same time as the virus are found to have developed a complete immunity to the disease. Of several rats thus treated, or one might say vaccinated, only one was found not to have become immune to a re-inoculation.

Action in vitro.—Owing to the insolubility of dioxydiamidoarsenobenzol, except in a great excess of fluid or in a medium which is alkaline, an accurate estimation of its destructive power on the parasites is impossible. In dilutions of 1 in 500 it appears to have very little injurious effect on the spirochætes, a result which merely supports the older fact that the antiseptic or bactericidal properties of a substance are no indication of its healing properties.

Influence on the Organism.

As a rule, after an injection of a therapeutic dose of dioxydiamidoarsenobenzol (0·05 gramme per kilogramme), the rats show little or no signs of any discomfort, eating and drinking as usual. Once or twice an animal did appear to be ill five or six hours after the injection, as it showed a disinclination to move and its coat was slightly staring, but a few hours later the animal had quite recovered. At the site of the inoculation a hard indurated swelling forms within 24 hours; the swelling then gradually diminishes in size and disappears in about a week. If a rat be killed 24 hours after it has received an injection of "606" this swelling is seen to consist of an œdematous infiltration of the subcutaneous tissue; not infrequently this œdematous infiltration is of a gelatinous consistence. In none of the animals examined was any tendency to hæmorrhage or necrosis observed at the site of inoculation.

After the injection of a larger dose (0·15 gramme per kilogramme of animal), which might be considered as the *dosis bene tolerata*, the general disturbance is more in evidence; the swelling at the site of inoculation is slightly larger, but a few hours afterwards the animal is again quite lively. When a still larger, that is, a toxic but non-lethal dose (0·3 gramme per kilogramme weight) is given the general disturbance is considerable, and the animal becomes very ill; its coat is very rough, it refuses all food, and has no inclination to move about. But these toxic effects soon pass off and the animal makes a rapid recovery. The internal organs of a rat which had received this large dose of "606" were examined macroscopically and microscopically. The liver was slightly paler, the lobules were more clearly marked out than usual, and a certain number of the liver cells appeared to be atrophied. The urine contained a small quantity of albumin, but no change suggestive of nephritis was found in the kidneys. The other organs appeared to be normal.

The high curative properties of dioxydiamidoarsenobenzol and its feeble action *in vitro* suggest that in all probability some change in its composition is brought about by the intermediary of the animal organism, such as happens in the case of atoxyl. The discovery of the actual mechanism by which the parasites are destroyed by "606" is a problem which would be rather difficult to solve. In the clearance of the spirochætes from the organism there are evidently two processes at work—namely, a direct destruction of the parasites and an increased phagocytosis. The latter is known to be the process principally involved in the production of a natural cure by a crisis, and an injection of dioxydiamidoarsenobenzol is followed by a considerable degree of leucocytosis, which suggests that phagocytosis also plays an important part in the production of the artificial crisis. What part the elaboration of antibodies plays in the latter it is impossible to say.

The chance of any toxic effects occurring in the employment of a therapeutic dose of "606" is extremely remote, as from the foregoing experiments, as well as from Hata's, it is seen that the *dosis maxima bene tolerata* is six times as great as the *dosis curativa;* while the fact that one dose alone is required to effect a complete cure in most spirochæte infections eliminates the possibility of toxic results from accumulation or from hypersensibility. In the cases of syphilis which we have ourselves treated we have obtained marvellous results, not the slightest bad effects having been noticed.

In conclusion, it may be said that dioxydiamidoarsenobenzol is a specific remedy for European relapsing fever, and no doubt it will be equally efficient in the other spirochætoses.

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THE VALUE OF OSSICULECTOMY IN CHRONIC MIDDLE-EAR SUPPURATION, AS A MEANS OF AVOIDING THE COMPLETE MASTOID OPERATION.

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THE operation of ossiculectomy—that is, the removal of the malleus and incus, together with the outer wall of the attic and any granulations existing within the tympanic cavity—was first performed by Schwartze in 1873. More recently, in this country, Richard Lake has drawn attention to the fact that such an operation is of considerable value in suitable cases. I do not, therefore, claim any originality, but merely wish to emphasise the fact that very excellent results may be obtained by this operation, both with regard to the cessation of the middle-ear suppuration and also with regard to the improvement of the hearing power, even in those cases in which the performance of the complete mastoid operation may have been suggested.

It is assumed, of course, before operative measures are discussed, that prolonged and careful conservative treatment has been given a trial when possible, and has failed.

In deciding which operation to adopt (and the choice lies between simple opening of the antrum and mastoid cells, ossiculectomy, or the complete mastoid operation), the surgeon not only has to consider how best to eradicate the disease and remove all further risk to life, but also how this can be done with the least inconvenience to the patient and the least detriment to the hearing power. With regard to the hearing power, any operation involving removal of the malleus and incus of necessity must reduce it to a certain extent, whereas the simple opening of the antrum and mastoid cells, provided the ossicles and the bony walls of the tympanic cavity are not yet irreparably damaged, may permit complete recovery of hearing to take place. This is an important fact which must not be lost sight of, as it may determine the operation to be undertaken. For instance, in certain cases of chronic middle-ear suppuration the hearing may still be good, and there may be no evidence of disease of the ossicles nor of the walls of the tympanic cavity, nor of the mastoid process itself. Under these circumstances there be merely a large perforation of the tympanic membrane, it may be assumed that the continuance of the suppuration is due to an affection of the mucous membrane rather than of the underlying bone: for example, to a chronic empyema of a large antrum cavity which, owing to its anatomical structure, will not drain freely. In such cases if the deafness be of the middle-ear type and the labyrinth be intact (as the complete mastoid operation would certainly diminish the hearing), the simple opening of the antrum and mastoid cells may justly be advised in the hope that free drainage of the antrum cavity by the posterior route may bring about a cure.

The average amount of hearing after removal of the malleus and incus is 12 feet off for conversation. If the hearing power is less than this, it is obvious that an operation involving the loss of the malleus and incus will not, *per se*, cause further deafness. Sometimes, however, after the complete mastoid operation the hearing power is reduced to a very marked degree, so that the patient may become almost completely deaf on the affected side; but this is usually in consequence of faulty after-treatment, and is the result of a pad of granulations being allowed to spring up and cover the inner wall of the tympanic cavity and region of the stapes. Subsequently, fibrous adhesions form and the stapes becomes fixed irrevocably within the fenestra ovalis.

In chronic middle-ear suppuration in which there is marked deafness the question arises as to whether the operation of ossiculectomy will be sufficient, or whether the complete operation is indicated.

Hitherto ossiculectomy has been limited chiefly to attic suppuration, in which a small perforation exists in Schrapnell's membrane, or in which there is a fistula of the outer attic wall situated in front of or behind the malleus. In some of these cases the hearing is remarkably good, and if so, surgical interference should be avoided, unless, in addition, there are recurrent attacks of tinnitus, giddiness, or headaches radiating up the affected side (symptoms signifying retention of the purulent secretion), in which case operation should be advised in order to ensure drainage and prevent further extension of the suppurative process. There is, however, a large group of cases which on examination show extensive disease of the tympanic cavity and its bony walls, and in which perhaps polypi and granulations have recurred more than once after removal, and in which, indeed, there may even be caries of the bony margin of the posterior attic region and entrance to the antrum itself. In these cases I would like to advocate that ossiculectomy should be given a trial before performing the complete mastoid operation, and that the latter should be limited to those cases in which there is direct evidence of disease of the mastoid process itself, as may be shown by a fistula extending through its anterior wall into the external auditory canal, or externally through the mastoid cortex behind the auricle; or in which there are signs and symptoms of active inflammation (shown by pain and tenderness behind the ear, together with constitutional symptoms, such as pyrexia, headache, and general malaise); or in which large cholesteatomatous masses protrude from the region of the attic and antrum. I have been drawn to this conclusion as a result of having performed the radical operation on a large number of cases in which at the time of operation there were no signs or symptoms of active inflammation within the mastoid process itself, although otherwise they had all the accepted signs and symptoms indicative of this operation.

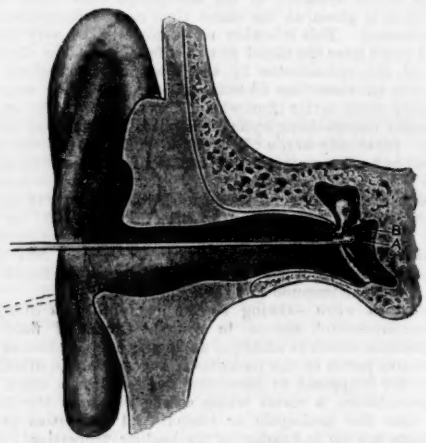
The fact which impressed me most in these cases was the large proportion in which the mastoid process was found to be extremely sclerosed and the antrum to be very small indeed. In such cases it seems to me that the more simple operation of ossiculectomy would have been equally effective, as by removing completely the outer attic wall, not only could the antrum itself have been curetted out, but free drainage from it would have been obtained. The difficulty is to tell beforehand the suitable cases, but this becomes largely a matter of experience.

Technique of the Operation of Ossiculectomy.[1]

Before the anæsthetic is given the ear should be filled with a 5 per cent. solution of cocaine, containing a 1 in 2000 solution of adrenalin chloride: this diminishes the bleeding during the operation. The field of operation is isolated from the surrounding parts by covering the head with a sterilised towel, having an opening cut in it just sufficient to expose the auricle and meatus. The steps of the operation are: (1) to free the malleus from its attachment to the tympanic membrane and from the inner wall of the middle ear if adherent to it; (2) cutting through the tendon of the tensor tympani muscle; (3) removal of the malleus; (4) removal of the incus; (5) removal of the outer wall of the attic; and (6) curetting out granulations from the tympanic cavity and attic region.

If granulations fill the tympanic cavity they should be removed and the hæmorrhage should be arrested by plugging the ear with a strip of gauze soaked in the cocaine and adrenalin solution, in order that a clear view of the field of operation may be obtained. The tympanic membrane, if present, is then incised with a paracentesis knife, the incision being carried well up in front of, and behind, the malleus, in order to cut through the anterior ligament and the posterior fold. The tendon of the tensor tympani muscle can then be severed by a Schwartze's tenotomy knife (a very fine blunt-pointed instrument, curved on the flat), which is inserted through the incision in the tympanic membrane, just behind the malleus, with its point directed upwards, and which is pushed upwards until its shaft is on a level with the processus brevis. The handle is then rotated in a forward direction, so that the sharp edge of the knife, which is kept close to the posterior border of the neck of the malleus, makes a circular movement forwards and downwards, and thus cuts through the tendon. The malleus thus freed can easily be removed

FIG. 1.



Diagrammatic section, showing removal of the malleus by Delstanche's curette. A, curette embracing the handle of the malleus. B, curette pushed upwards so as to divide the tensor tympani muscle.

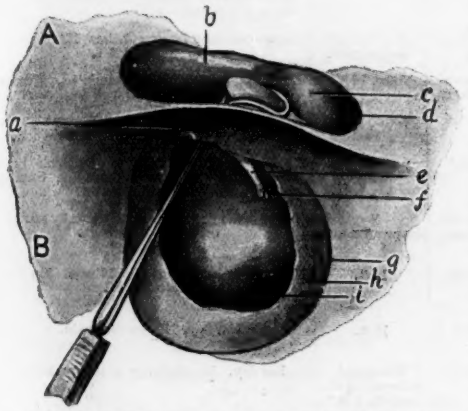
[1] For further details see the writer's article in Burghard's System of Surgery, vol. iv., p. 351, from which the illustrations in the present paper have been taken.

by seizing its handle with a pair of fine forceps, care being taken to pull it downwards until the head of the malleus is seen within the tympanic cavity. If this precaution be not taken, but an attempt is made to pull the malleus directly outwards, its neck may be fractured owing to its impinging against the outer wall of the attic. If this takes place, the head of the malleus may be left behind, and its extraction may become a matter of difficulty.

Another method of extracting the malleus is by Delstanche's ring-knife, and this, in my opinion, is the one to be preferred. This instrument is an ordinary ring-knife, in which the upper border of its anterior part is especially sharpened so as to form a fine cutting surface. The ring-knife is made to encircle the handle of the malleus, and is then pushed gradually upwards, keeping as close to the posterior border of the malleus as possible, until it cuts through the attachment of the tensor tympani. In doing this the instrument will embrace the neck of the malleus, and will thus permit of sufficient leverage to extract the malleus by gentle traction in a downward and outward direction. After removal of the malleus, the hæmorrhage should be arrested and a clear view obtained of the inner wall of the tympanic cavity.

The incus is now removed by Zeroni's incus-hook, which consists of a steel evelet, having a backward curve, and bent at a right angle to the shaft of the instrument. It is inserted into the attic at the point previously occupied by the head of the malleus, the hook being directed upwards, having its concavity backwards (Fig. 2). The shaft of the instrument is then rotated backwards, so that the hook passes over the body of the incus, and as the rotatory action is continued downwards and finally forwards, the incus is dislodged from its position and forced into the tympanic cavity. It can now be removed by a pair of fine forceps.

FIG. 2.

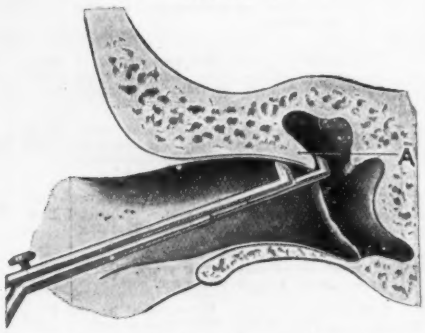


Removal of incus by Zeroni's hook. A, diagrammatic section showing opening in tegmen tympani; *b*, processus cochleariformis; *c*, external semicircular canal; *d*, aditus and antrum. B, diagrammatic section, through the auditory canal, just beyond the tympanic membrane; *e*, long process of incus; *f*, incudo-stapedial joint; *g*, tympanic ring; *h*, remains of tympanic membrane; *i*, fenestra rotunda; above it is the promontory.

The next step is the removal of the outer attic wall, which is performed with a small but strong pair of punch-forceps. The instrument is directed along the roof of the auditory canal, its cutting edge being held upwards, with the blades slightly open. When the outer blade is felt to pass over the outer wall of the attic, the handle is then depressed, so that the outer end of the forceps is forced upwards and the outer wall of the attic is embraced between its points. This is confirmed by attempting to withdraw the forceps, which the outer bony wall of the attic will now prevent. The blades of the forceps are now brought together by pressure on the handle, and a small portion of the bone is punched out (Fig. 3, A). In this way the outer wall of the attic can be cut away gradually in small fragments. Into the larger opening thus made small curettes are passed upwards and backwards, and any granulations in the region of the aditus and entrance to the antrum are curetted away.

As a final measure, any granulations arising from the floor of the tympanic cavity, and especially at the entrance of the Eustachian tube, are similarly removed. The cavity is then swabbed out with a pledget of cotton-wool soaked in a 1 in 2000 solution of biniodide of mercury, and a small drain of sterilised gauze is inserted within the auditory canal, the ear being afterwards covered by a pad of gauze. The dressing need not be changed for two or three days, and is then repeated daily or every second day until healing. In some cases, however, there may be considerable pain at first, owing to the forcible bruising of the tissues of the inner part of the auditory canal during the act of removal of the outer wall of the attic. This, however, usually subsides within a day or two. If, on the other hand, there is much purulent discharge, which may be profuse for a few days after the operation, the ear should be syringed out, and

FIG. 3.



Removal of outer attic wall with forceps. A, outer attic wall.

after drying the auditory canal a few drops of a 10 per cent. solution of carbolic acid in glycerine should be instilled. Subsequently, drops of rectified spirit may be substituted. As a rule, the patient can get up on the third day and be at work again on the tenth day or earlier, although syringing and instillation of drops may be necessary for several weeks afterwards. One reason why the operation of ossiculectomy has been neglected is its apparent difficulties, which to some seem to be considerable. As a matter of fact, the operation is exceedingly simple, provided a good view of the field of operation is secured.

Results of Operation.

During the last nine years I have performed this operation in over 120 cases, the large majority of which have been in hospital practice. Of these, however, I have only been able to verify results in a little over 50 cases, but as (in hospital practice at any rate) the tendency is for those who have been treated successfully to ignore requests to return for further examination, it may be assumed that the average of results in those who did not return to me for inspection is just as good as, if not better than, in those who did.

A brief summary of these cases shows that in 52 per cent. the ear is now dry and all signs of suppuration have ceased. In 30 per cent., although there is still a slight intermittent discharge, it is muco-purulent in character, and in almost every case is due to infection through the Eustachian tube, as a result of post-nasal catarrh; but there is no evidence of any active suppuration or disease of the mastoid process. In 10 per cent. it is impossible to say whether the mastoid operation eventually will be necessary, but meanwhile free drainage has been secured and there are no signs pointing to extension of the suppurative process.

In the three cases in which the mastoid operation became necessary a successful result was obtained. In only one case did death occur, and that a year later on account of subsequent infection of the lateral sinus. In this case, no doubt, the performance of the complete mastoid operation instead of ossiculectomy would have saved the life of the patient. It must, however, be remembered that this patient did not keep under observation at the hospital, or the mastoid operation no doubt would have been performed. So far as I know, this is the only case of death, and these are the only three cases in the 120 on which I have performed the operation of ossiculectomy which eventually required the mastoid operation. With regard to the hearing power, in many cases surprisingly great improvement has occurred, even in those in

I.—*Cases Cured.*

No.	Sex and age.	Symptoms before operation.	Date of operation.	Hearing.		Present condition.
				Before operation.	After operation.	
1	M., 23	*R.* Otorrhœa over 5 years. Large perforation—fistula into attic. Head of malleus carious.	Dec., 1904.	Voice, 18 in.	Oct., 1905: voice, 24 ft.; watch, 6 in.	Ear dry. White scar lining inner wall of tympanum.
2	F., 40	*R.* Otorrhœa off and on 25 years. No pain. Granulations blocking upper part of tympanic cavity. Fistula leading through attic.	Feb., 1909.	Voice, 6–8 ft.	10 ft.	Ear dry within one month after operation. No further discharge.
3	F., 40	*L.* Otorrhœa 15 years. Attacks of pain, headache and giddiness when discharge ceased. Constant neuralgia along affected side of head. Aural polypus blocking ear. Chronic attic suppuration.	Feb., 1909.	Speech, 8–10 ft.; whisper, 3 ft.	Practically the same.	After operation. Cholesteatomatous débris in attic and antrum. Considered probable mastoid operation must be done later. Ten weeks after, ear completely healed. No further discharge since. Headaches and neuralgia completely disappeared.
4	F., 25	*L.* Otorrhœa 4–5 years. Frequent attacks of headache up affected side. Large fistulous opening into attic, in front and behind malleus which is adherent to inner wall.	Oct., 1904.	Watch, 1 in.; whisper, 1 ft.	Dec., 1904: watch, 9 in.; whisper, 4 ft.	Headaches immediately disappeared, but slight serous discharge for some months. Inner wall of tympanic cavity now looks healthy. Ear dry.
5	M., 27	*R.* Otorrhœa and extreme deafness since childhood. Occasional neuralgic headache on affected side. Large polypus blocking ear.	May, 1909.	Almost complete deafness, chiefly of nerve type.	No change.	Ear dry. No further headaches or neuralgia.
6	F., 33	*L.* Otorrhœa since 4 years old. Attacks of severe headache on same side. Tinnitus. Large polypus with granulations blocking tympanic cavity.	Oct., 1906.	Voice, 3 ft.	7–8 ft.	Ear dry six weeks after operation.
7	M., 33	*R.* Otorrhœa off and on for years. Headaches. Large polypus filling ear.	Jan., 1909.	Voice, 2 ft.	6 ft.	Three months after operation, ear clear. False membrane forming. No further headaches.
8	M., 27	*L.* Otorrhœa 12 years. Intermittent headaches up affected side. Ear full of granulations. Question of doing complete mastoid operation.	Feb., 1910.	Practically completely deaf.	Voice, 18 ft. +	After operation, giddiness, headache, and profuse otorrhœa for 10 days. Question of complete mastoid operation. Gradual recovery, ear dry—scarred over.
9	F., 19	*L.* Otorrhœa. ? always.	1908.	Nearly stone deaf.	Voice, 16–18 ft.; speech, 10 ft.	Inner wall lined by scar tissue. No recurrence of granulations.
10	F., 24	Otorrhœa for years. Granulations covering inner wall.	June, 1909.	Almost complete deafness.	Voice, 14 ft.; speech, 8–10 ft.	Discharge ceased within 6 months. Mucous membrane red—inner wall well seen.
11	F., 60	*R.* Large polypus. Profuse offensive discharge for years.	1908.	? *nil.*	Voice, 2–3 ft.	Discharge ceased in 3 weeks. Dry perforation in attic region. Lower part scarred over.
12	F., 24	*R.* Otorrhœa since childhood. Attacks of ear-ache and giddiness. Large fistula into attic. Caries of ossicles. Polypus.	Nov., 1907.	"Very bad."	"Much improved"; voice, 10 ft.	No discharge nor recurrence of polypi. Large perforation. Mucous membrane covering promontory red and smooth.
13	F., 20	*R.* Otorrhœa 15 years. Attacks of giddiness with headaches up affected side.	Aug., 1909.	Practically *nil.* (Nerve deafness.)	No improvement.	Inner wall tympanic cavity partially scarred over. No discharge.
14	F., 20	*L.* Otorrhœa over 10 years. Polypi. For 12 months attacks of pain over mastoid region, and same side of head, with giddiness.	April, 1909.	Voice, 3ft.	16 ft.	No further headaches or giddiness. Ear dry. Scarred over.
15	F., 16	*L.* Otorrhœa all life. Polypi. Pain on affected side of head.	Feb., 1910.	Voice, 5 ft.	18 ft.	Ear dry. No further pain.
16	F., 31	Otorrhœa and tinnitus for years.	March, 19.9.	Very deaf.	Voice and whisper, 18 ft.; watch, 3 in.	Ear dry. No discharge since operation.
17	F., 25	*L.* Otorrhœa. Polypi. Attacks of pain in head and giddiness 5 years.	July, 1909.	,,	Voice, 15 ft.	Feels well; very pleased. Ear dry.
18	M., 13	*R.* Otorrhœa since 5 years old.	1905.	"Had to shout."	Voice, 4 ft.	Discharge ceased in 3 weeks. Tympanic cavity scarred over except small opening into Eustachian tube.
19	F., 42	*R.* Otorrhœa for years. Aural polypus removed more than once. Question of doing complete mastoid operation.	Nov., 1909.	Very deaf.	No improvement.	Ear dry.
20	F., 13	Otorrhœa for 10 years.	July, 1909.	,,	Voice, 18 ft.	,,
21	M., 7	Otorrhœa since babyhood. Polypi protruding from ear.	Oct., 1909.	Almost complete deafness.	Voice and whisper, 18 ft.	Large perforation; inner wall pale. No discharge four weeks after operation.
22	F., 28	*R.* Otorrhœa for years. Polypus. Pains in head.	Nov., 1907.	Very deaf.	25 ft. +	Small perforation. Scarring of chief portion. Ear dry.
23	M., 25	Otorrhœa 4 years. Granulations. Headaches.	March, 1909.	,,	14 ft. +	Inner wall clearly seen. Mucous membrane red. Ear dry.
24	M., 20	Otorrhœa 1 year. Polypi and granulations. Outer wall of attic carious. ? Do complete mastoid operation.	July, 1909.	1 ft.	No improvement.	After operation profuse discharge, with headaches. Inner wall now scarred over except in upper posterior part. Ear dry.
25	F., 24	Offensive discharge for years.	1908.	Very deaf.	20 ft. +	Ear dry.
26	F., 24	Otorrhœa for years. Granulations. Fistula into attic. Neuralgia and headaches on affected side. ? Do mastoid operation.	1907.	,,	12 ft.	,,

II.—*Cases Much Improved.*

No.	Sex and age.	Symptoms before operation.	Date of operation.	Hearing.		Present condition.
				Before operation.	After operation.	
27	F., 20	Otorrhœa for years. Granulations filling tympanic cavity.	1908.	Very deaf.	16 ft.	Slight intermittent discharge. Mucous membrane of inner wall red. No recurrence of granulations or polypi.
28	F., 20	*L.* Otorrhœa for years. Fistula into attic.	1904.	,,	5-6 ft.	"A lot better." Ear moist. Inner wall of tympanum partially scarred over.
29	F., 12	*R.* Otorrhœa since babyhood. Polypus partially blocking ear. ? Do complete mastoid operation.	1908.	Voice, 8-10 ft.	Whisper, 18 ft.	"Doesn't seem a bit deaf." Mucous membrane of inner tympanic wall red. No sign of polypi nor diseased bone. Slight mucous discharge after a cold.
30	F., 24	*L.* Otorrhœa for years. Polypi, pains in head. Attacks of giddiness. ? Do mastoid operation.	1907.	Nearly completely deaf.	Not improved.	No longer head symptoms, only slight discharge after a cold.
31	F., 12	Chronic otorrhœa. Polypus.	Oct., 1908.	Very deaf.	Voice, 18 ft.	Large perforation. Mucous membrane red. Only slight muccus discharge after a cold.
32	F., 22	*R.* Otorrhœa for years. Headaches on same side. Marked giddiness on syringing.	March, 1909.	3 ft.	Voice, 12 yds.; whisper, 16 ft.	After operation headaches increased, pyrexia, profuse otorrhœa. Gradual recovery. Now intermittent slight mucous discharge.
33	F., 27	*R.* Chronic otorrhœa. Headaches. Attacks of pain. Tinnitus.	1908.	Only hear "shouting."	No improvement.	Large perforation. Slight purulent discharge after a cold. Headaches and tinnitus markedly diminished.
34	F. 21	*L.* Otorrhœa since 3 years old. Large polypus.	June, 1909.	Very deaf.	Hearing improved; voice, 5-6 ft.	Occasional slight mucous discharge, otherwise well.
35	M., 31	*R.* Otorrhœa 15 years. Multiple polypi. ? Do complete mastoid operation.	Nov., 1907.	,,	Voice, 16 ft.	Occasional slight mucous discharge. No recurrence of polypi.
36	M., 22	*R.* Otorrhœa 4 years. Polypi blocking external auditory canal. Attacks of giddiness.	June, 1908.	,,	Watch, 4in.; conversation, 15-18 ft.	Central perforation with scarring. Occasional slight discharge.
37	F., 24	*L.* Otorrhœa 10 years. Granulations in middle ear.	1907.	,,	Speech, 14 ft.	Discharge ceased 3 months after operation for 2 years. Now intermittent discharge. No recurrence of granulations.
38	F., 31	*L.* Chronic otorrhœa. Headaches. Polypi. Tinnitus.	Sept., 1907.	Just hear voice.	Voice, 16 ft. +	Pain, headaches and tinnitus ceased. Occasional slight muco-purulent discharge.
39	M., 22	Chronic otorrhœa. Granulations.	1908.	Voice, 7 ft.	10 ft.	Slight discharge at times, otherwise well.
40	F., 20	*R.* Otorrhœa for years. Granulations. General headaches.	1909.	Very bad.	15-18 ft.	Occasional discharge, headaches continue, but apparently not due to ear trouble.
41	M., 11	*R.* Otorrhœa 4 years. Polypi removed twice. Granulations. ? Do mastoid operation.	1906.	3 ft.	Voice, 20 ft.	Still slight intermittent discharge. No recurrence of polypi.

III.—*Not Cured, but Mastoid Operation Avoided.*

42	F., 22	*R.* Otorrhœa 5 years. Granulations.	Sept., 1909.	Voice, 4-6 ft.	No improvement.	Discharge not ceased, but slightly diminished.
43	F., 13	*L.* Otorrhœa for years. Polypi.	Nov., 1909.	Very deaf.	Not improved.	Still otorrhœa, but no recurrence of polypi.
44	M., 13	Otorrhœa for years. Granulations.	May, 1909.	,,	Hears better.	Central perforation. Otorrhœa continues.
45	F., 16	*L.* Otorrhœa since childhood. Attic suppuration.	1909.	,,	No improvement.	Still otorrhœa.
46	F., 27	Chronic otorrhœa. Granulations. Constant headaches on affected side.	1908.	,,	Not much better.	Discharge continues. "Never so free from headaches."

IV.—*Mastoid Operation eventually Necessary.*

47	P., 14	*R.* Otorrhœa since babyhood. Offensive discharge. Large fistula leading towards entrance of antrum. Cholesteatomatous débris. Mastoid operation advised but refused.	Aug., 1907.	6 ft.	No improvement.	Conservative treatment till Nov., 1908, when complete mastoid operation was performed. Extensive cholesteatoma found. Ear now dry; was completely healed within 10 weeks after operation.
48	F., 17	*L.* Otorrhœa, granulations, since childhood.	Sept., 1907.	8 ft.	,,	Otorrhœa continued. Recurrence of granulations. Mastoid operation. Ear now dry.
49	M., 22	*L.* Otorrhœa for many years. Granulations. Fistula into attic.	1908.	8 ft.	The same.	Recurrence of granulations. Mastoid operation advised. Eventually went to Royal Ear Hospital where mastoid operation was performed with complete success. Ear dry.

V.—*Death from Subsequent Lateral Sinus Thrombosis.*

50	M.	*R.* Otorrhœa since childhood. Ear filled with granulations. Offensive discharge.	1907.	Very deaf.	No improvement.	Continuance of discharge. Lost sight of. Brought to hospital 12 months later with signs of lateral sinus thrombosis. Rigors. Paralysis sixth and seventh nerve on right side. Optic neuritis. Internal jugular vein tied. Death 9 days later from meningitis.

which there was almost complete deafness before the operation, and that for a considerable period. In 12 cases the voice can now be heard at least 18 feet off, and in 11 cases over 12 feet off; that is, in 23 cases (46 per cent.) the hearing power remains or has been restored to a degree sufficient for most practical purposes.

On comparing the operation of ossiculectomy with the complete mastoid operation, the following points may be mentioned.

In favour of ossiculectomy.—1. The large number of cases which can be cured or in which the mastoid operation may be avoided. 2. The large proportion in which a good result is obtained with regard to the hearing power. 3. The slight inconvenience of the operation to the patient and the short duration of the after-treatment.

Against ossiculectomy.—It has been urged that in many cases the mastoid operation eventually may become necessary, even although an apparent cure or cessation of discharge may be obtained for a short period after ossiculectomy has been performed, and also that the minor operation does not render the patient completely free from further risk of intracranial complications. With this I do not agree, and I hope the cases I have quoted will support my contention.

It is no doubt true that the above objections to ossiculectomy may have held good some years ago, when the operation was not performed so thoroughly and the outer attic wall was not removed. It must also be admitted that in a certain number of cases, owing to the formation of adhesions, the hearing power, although very good soon after the operation, may eventually become worse. But this, however, may also take place after the complete mastoid operation.

Speaking generally with regard to middle-ear suppuration, I feel sure that if Schwartze's operation (simple opening of the antrum and mastoid cells) were performed more frequently in those cases in which the discharge did not cease within two months, the suppurative process might be arrested and the hearing power in many cases might be restored to normal. But if, on the other hand, the surgeon only sees the patient after the suppurative process has existed for a lengthy period, then I consider that if conservative treatment fails, ossiculectomy, if possible, should be given a trial before performing the complete mastoid operation, unless this is absolutely imperative.

Harley-street, W.

ISO-HÆMOLYSIS IN RELATION TO CANCER.[1]

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Iso-hæmolysis in Malignant Disease.

FROM time to time clinicians and pathologists have sought for some sign of malignant disease which should lend greater accuracy to the diagnosis of this condition. This hope would seem at first sight to be futile when we consider the different morphological types of malignant disease and the various situations in which it may occur. Yet on further observation it is seen that malignant tumours have certain points in common, and the most characteristic of these is their tendency to unlimited peripheral growth, while the cells in the middle and older parts of the tumour perish from lack of nutriment.

The surgical treatment of cancer is based on the assumption that it is, in its inception, a local condition; but the later stages of its growth are associated with general emaciation and anæmia—the cancerous cachexia—which would seem to indicate that some product of the cancer enters the circulation and exerts a harmful effect on the general metabolism. Whether this toxic substance arises from the autolysis of the malignant cells or is a secretion of the proliferating part of the tumour it is evident that it must be sought in the blood, and it is the blood cells and serum in malignant disease that have attracted most attention.

The existence of hæmolytic substances in the serum of certain individuals has been known for many years, but there has recently been a renewal of interest in the subject, stimulated chiefly by the work of Weil of New York and Crile of Cleveland.

[1] A paper read before the Leeds and West Riding Medico-Chirurgical Society.

In the course of his work on the infective lymphosarcoma of dogs Weil found that extracts of these tumours possessed the power of laking the red corpuscles of normal dogs. This was more particularly the case when the tumours had undergone central necrosis. He further discovered that the blood serum of dogs affected with this condition, especially when the tumours were breaking down, acquired hæmolytic properties. Following this Weil tested human sera in a series of 82 cases, 31 of which were malignant. He divides his results into four groups: (1) Serum which does not hæmolyse its own but hæmolyses alien cells; (2) serum which hæmolyses its own and alien corpuscles; (3) serum which hæmolyses its own but not alien corpuscles; and (4) serum which does not hæmolyse its own or alien corpuscles.

—	Group 1.	Group 2.	Group 3.	Group 4.
Early malignant tumours...	6	2	1	8
Late malignant tumours ...	9	2	2	3
Benign tumours	1	0	1	1
Other diseases...	11	0	2	29
Normal	0	0	0	6

He concludes that the results in human beings are less characteristic than in the case of the dog tumours, and this is only to be expected since the dog tumours are all of one morphological type.

Crile's work attracted considerable attention by reason of the large number of cases examined and the remarkably high percentage of positive results he obtained in cases of cancer. He also described a "reverse reaction" frequently noted in cases of tuberculosis, a disease which, like cancer, is often associated with a hæmolytic serum. This "reverse" reaction is said to be present when the patient's red cells are laked by normal serum. Crile found that the serum was hæmolytic in 85 per cent. of the cases of cancer, and, contrary to Weil's observation, noted that it was more marked in the early cases. The high diagnostic value given to this test by Crile has led to the publication of the results obtained by numerous other workers, the greater number of them giving a far lower proportion of positive reactions in cancer.

Janeway studied 35 cases of cancer. Seven were early cases, or cases with a small amount of malignant tissue present; 4 of these were positive. It is noteworthy that all four were recurrent growths. There were 18 late cases, of which 7 were positive. There were also 10 examples of cancer of the face, of the rodent-ulcer type, only 1 of which was positive; this was an advanced case. The total percentage of positive reactions was 48·5. He met with one positive reaction in a case of chronic mastitis.

Ottenberg and Epstein examined 100 cases. These were taken in groups of 10 or 15, the serum of each one being tried on the cells of every other member of that group. Of the 100 subjects 38 were malignant, 40 had other diseases, and 22 were apparently healthy. Of the cancer cases 28 had hæmolytic serum (76 per cent.), and 20 of the cases with other diseases were positive (50 per cent.); 6 of these were tuberculous, 5 being hæmolytic. Among the other diseases which gave positive results were 3 benign tumours, 2 fibro-adenomata of the breast, and 1 diffuse lipoma. One of the 22 normal cases showed hæmolysis. A strong hæmolytic reaction was present in 50 per cent. of the cancer cases, and in only 17 per cent. of the 40 other cases. If the resistance of the corpuscles was considered as well as the reaction of the serum, it was found that a hæmolytic serum generally laked non-cancer cells, but did not affect cells from a cancer patient, or was lytic to both kinds of cells according as it was weakly or strongly hæmolytic. If attention was paid only to the resistance of the red cells it was seen that red blood cells resistant to all sera occurred chiefly in those cases whose serum was itself hæmolytic, and not much more frequently in cancer than in other diseases. On the other hand, resistant red cells were obtained rarely from cases with non-hæmolytic serum. These authors are inclined to agree with Weil in associating the hæmolytic property of the serum with the autolytic products of necrosis, though it is noteworthy that the sera of four early tumour cases were strongly hæmolytic.

Smithies examined 85 cases affected with various ailments. Twelve of these were cases of cancer, of which 7 (58·3 per cent.) were hæmolytic, 3 negative, and 2 undetermined.

There were 2 benign tumours, both negative; and 15 cases of tuberculosis, 1 positive, 6 negative, 6 undetermined, and 2 reverse. Of 12 cases of syphilis, 1 was positive, 8 were negative, and 3 undetermined. Of 25 other non-malignant affections, 5 were positive, 13 negative, 6 undetermined, and 1 reverse. He describes a positive reaction as one in which the cancer serum destroys normal cells, while the cancer cells are not destroyed by normal and frequently by cancer serum. If hæmolysis occurs in both the reaction is called undetermined. In the malignant cases those more advanced gave the most marked reactions. Generally speaking, the reactions were more marked in the malignant than in the other cases.

The results obtained by Johnstone and Canning approach more nearly those of Crile. Of 43 cases of carcinoma 37 were positive (80·6 per cent.). Nine cases of sarcoma gave 100 per cent. positive results, though the reactions were not as marked as in the carcinoma cases. Two endotheliomata were positive; 14 benign tumours were all negative. Of 43 cases of tuberculosis 7 gave reversed reactions, the remainder were negative. The sera of 103 persons suffering from other diseases gave 17 positive reactions. There were 4 positive reactions among 85 normal individuals; these 4 cases were all negative when re-examined in a day or two. In all the malignant cases re-examined the reaction was constant. There were not many cases of superficial epitheliomata among this series.

Butler examined 22 cases of cancer, mostly of the stomach, uterus, and breast. The sera of 13 of these (59 per cent.) were hæmolytic, some hæmolysing the corpuscles of other cancer patients. Three out of 8 tuberculous sera were hæmolytic; reverse hæmolysis was not seen. In 2 cases of cancer the serum was hæmolytic for the corpuscles of the same individual (auto-hæmolysis).

Richartz obtained a positive reaction in 46 per cent. of 74 malignant cases; those most advanced were generally negative.

The results obtained by Whittemore differ remarkably from the foregoing. He tested the sera from 101 persons. Thirty-nine of these were normal among whom 7 had hæmolytic sera. Among the remainder were 22 cancer cases, none of whom had hæmolytic sera, but the corpuscles from 8 of these patients were hæmolysed by normal sera. This reverse reaction was seen in 4 out of 8 tuberculous cases and in 4 out of 32 patients suffering from other diseases. The only 2 hæmolytic sera shown in his table belong to this group, one a case of sarcoma of the antrum and the other a general paralytic.

Blumgarten, following Weil's technique, has tested the serums of 75 patients, 25 of whom were suffering from advanced cancer. Eighteen of these (72 per cent.) hæmolysed normal corpuscles, while only 1 per cent. of the normals and cases of other diseases were hæmolytic.

An interesting comparative study of the hetero-hæmolytic and iso hæmolytic properties of cancerous blood has been recently published by Kelling, who has had a most extensive experience in this work. He gives a table of 100 cases in which the blood was tested against human and fowl's corpuscles. On the showing of the table there appears to be an advantage, from the diagnostic point of view, in favour of heterolysis, but he thinks that if the intensity of the reaction is taken into consideration the facts are otherwise and that the method of iso-hæmolysis possesses fewer sources of error.

Technique.

After carrying out a few observations by Crile's method it seemed desirable to evolve a technique which would not necessitate the abstraction of so large a quantity of blood, and after various trials I adopted the following method as requiring a minimal quantity of serum.

A small quantity of blood is obtained from the finger and collected in two glass capsules in the ordinary way. One of the capsules is sealed and set aside to allow of clotting. To the other sample is added an equal quantity of citrated saline (0·85 per cent. sodium chloride, 0·85 per cent. sodium citrate in distilled water); the tube is shaken and put aside until the test is to be set up. After a few hours the clot is extracted from the first tube and the serum centrifugalised until free from corpuscles. The corpuscles in the other tube are separated by centrifugalising and washed with saline (0·85 per cent.) three times. All the samples of normal and diseased blood collected at approximately the same time are treated in a similar way.

A length of quarter-inch glass tubing is drawn out in the flame at intervals of two inches and is then divided up into a number of capsules. Each capsule is filed across at its middle and the narrow ends sealed, thus forming a series of minature test tubes or goblets.

Each goblet is filled from a pipette with a few drops of pure liquid paraffin which is then shaken or centrifugalised down to remove air bubbles. The capsules are then stuck upright in a Petri dish filled with plasticine and numbered.

With a capillary pipette, freshly rinsed in saline, a minute drop of serum is allowed to fall into each goblet where it will sink slowly through the oil and come to rest just above the narrow part. The number of tubes needed will depend on the sera to be tested. Serum from a suspicious case should be tried on all the available corpuscles. Each normal serum should be tried on the corpuscles of all other normals. Each pair of goblets receives the same serum, the right hand goblet of each pair being the control. The controls are then placed in order in a water bath and kept at a temperature of 55° to 60° C. for ten minutes to destroy the complement. After being inactivated the controls are returned to their place in the dish, which is placed in cold water until all the tubes have reached the same temperature.

Each pair of goblets then receives a drop of the appropriate corpuscles in 20 per cent. emulsion. By using an emulsion of this strength instead of 5 per cent, as is customary, it is possible to use only a minute drop and thus avoid diluting the mixture.

The tubes are kept in the incubator at a temperature of 37° C. for two hours and the results then read off.

It is usually recommended that the tubes should be kept in the cold for 12 hours after incubating before noting the results, but this is unnecessary when dealing with such small quantities, for the corpuscles sink to the bottom in two hours. Nothing is to be gained by cooling the mixture before incubation, and there is no advantage in keeping the tubes in the incubator longer than two hours.

Hæmolysis in the unheated tube but not in the heated control is recorded as a positive result; if hæmolysis occurs in both tubes it is to be regarded as due to an error in technique, and the observation is to be repeated; but with care in using clean tubes and pipettes I have only rarely found this necessary. All results should be read within 24 hours of the abstraction of the blood.

Results.

The sera of 86 individuals have been examined.[1] These may be divided into five groups.

Group 1.—Carcinoma, 34 cases. 17 of these were hæmolytic, 15 were negative, and 2 doubtful. Eliminating these two cases there are 56·25 of the carcinomatous sera which gave positive results. In 18 cases the resistance of the corpuscles was tested; the cells were resistant in 9, one of which had a non-hæmolytic serum; and in the remaining 9 the cells were non-resistant. One of these came from a blood whose serum was hæmolytic. If these cases are grouped according to the locality of the growth it is evident that the proportion of cancers with hæmolytic sera varies with the seat of the disease.

—	—	Hæmolytic.	Non-hæmolytic.	Doubtful.
5	Lip and tongue.	1	3	1
1	Maxilla.	0	1	—
7	Œsophagus.	3	3	1
1	Stomach.	1	0	—
4	Colon and rectum.	4	0	—
10	Breast.	7	3	—
5	Uterus (cervix).	0	5	—
1	Vulva.	1	0	—
34	—	17	15	2

If the cases are viewed in the light of the histological type of growth it is seen that the spheroidal and columnar-celled carcinomata furnish the majority of the hæmolytic sera.

All cases were diagnosed by microscopic examination or by the naked-eye appearances at operation except five cases

[1] For the opportunity of observing many of these cases I am indebted to the courtesy of my colleagues on the infirmary staff.

of cancer of œsophagus, in which the diagnosis rested on clinical evidence, two cases of cancer of the breast, one a typical early scirrhus (positive), and a late ulcerating cancer, and one advanced inoperable epithelioma of lip.

Group 2.—Sarcoma, 5 cases. One of these was hæmolytic, the remaining 4 were negative. The hæmolytic serum was from a case of sarcoma of the humerus, while the negative sera came from cases of sarcoma of the tonsil, hand, sternum, and kidney.

Group 3.—Tuberculosis, 8 cases. 4 of these cases were positive, 3 were negative, and 1 was doubtful. In addition to these there were 2 negative cases in which the clinical evidence of tubercle was very questionable.

Group 4.—Other affections, 27 cases (including cases of rheumatoid arthritis, syphilis, malaria, hyperthyroidism and hypothyroidism, gastric ulcer, chlorosis, chronic bronchitis, and subacute and acute pancreatitis). 22 of these were negative, 3 were doubtful, and 2 gave positive results. Of these two hæmolytic sera, one was from a youth with a chronic hydrocele; no sign of tuberculous disease of the testis was noted at the operation. The other was from a man with paroxysmal hæmoglobinuria. This serum was interesting in that it was not only hæmolytic for the corpuscles of two normal individuals, but it also dissolved the red cells from two persons with hæmolytic sera (cancer of the breast and tuberculous osteomyelitis) which were each resistant to the other's serum. Furthermore, the hæmoglobinuric serum did not hæmolyse when mixed with corpuscles and placed in the incubator at once, but hæmolysis occurred if the mixture of red cells and serum was cooled for half an hour before incubation, in this respect differing from the other hæmolytic sera examined. This serum was not autohæmolytic; it was drawn in an interval between attacks. Four of the negative cases in this group were benign tumours (two myomata, a papilloma of the bladder, and a papilloma of the larynx), and one a peritoneal endothelioma.

Group 5.—Normals, 10. All negative. One of these was a negro.

Relation of Iso-hæmolysis to Iso-agglutination.

That there is some relation between these two phenomena is suggested by the fact that a lytic serum will agglutinate those corpuscles against which it is hæmolytic. In only a few instances have I directed special attention to this point, but these have shown the above to be true. Dudgeon states that iso-agglutination occurred whenever iso-hæmolysis was demonstrated. On the other hand, iso-agglutination is of common occurrence in many diseases, whereas iso-hæmolysis is less frequent. The hæmo-agglutinins are, like the hæmolytic immune bodies, thermostable, but they do not need the presence of complement for their action, whereas the hæmolytic immune body does not dissolve red corpuscles in the absence of thermolabile complement. Thus a hæmolytic serum inactivated by heat will produce agglutination without hæmolysis. And further, as became evident in the saturation experiments to be described, the red cells are susceptible to agglutinins in the cold just as they are capable of absorbing hæmolytic amboceptor at a low temperature. In spite of these resemblances between iso-agglutinins and hæmolytic amboceptors Dudgeon concludes that the agglutinative and hæmolysing properties of normal or immune sera on red blood cells have no direct relation to one another.

Resistance of Red Cells.

The red cells from a blood whose serum is hæmolytic are generally capable of resisting the action of a hæmolytic serum from another individual. Among 24 samples of hæmolytic bloods the resistance of the corpuscles was tested against another hæmolytic serum in 11, only one of which was laked. Nine of these 11 were from malignant disease. In no case did I find corpuscles destroyed by the serum of the same individual (auto-hæmolysis). If the reactions in the test-tube are at all comparable with the changes occurring *in vivo* it would be reasonable to expect the red cells to acquire a resistance to their own hæmolytic serum, for otherwise hæmoglobinuria would not be an uncommon event in cancer even through a chill, as claimed by Eason, were necessary to enable the cells to absorb the amboceptor. As for the phenomenon of reverse hæmolysis in tuberculosis I have not seen it. On the contrary, the behaviour of the red cells from a tuberculous hæmolytic blood appears identical with that of the cells from a case of malignant disease. It should be noted here that this reverse hæmolysis was observed by Dudgeon in cases of typhoid, syphilis, and pneumonia, and in some cases not only were the immune cells laked by normal serum but the immune serum of the same patient hæmolysed normal corpuscles. I have already alluded to the results obtained by Whittemore; his tables show that 16 out of 18 examples of hæmolysis were produced by the action of normal sera on immune red cells. This is in keeping with the fact that 7 of his 39 normals were hæmolytic.

The resistant quality of the red cells appears to depend on their inability to absorb amboceptor. This is shown by the following experiment. Cooled hæmolytic serum from a case of carcinoma of the colon was placed in two tubes—A and B. Tube A was saturated with my washed corpuscles; tube B with washed corpuscles from a case of cancer of the breast (whose serum was hæmolytic). Both tubes were kept in the cold for half an hour and then centrifugalised, the resulting sera, A1 and B1, being pipetted off, and the sedimented corpuscles, A2 and B2, being washed three times in saline. My fresh washed corpuscles were added to tubes A1 and B1, while my fresh serum was added to tubes A2 and B2. After two hours' incubation hæmolysis had taken place in tubes A2 and B1, but not in A1 or B2.

As suggested above the cells from a hæmolytic tuberculous blood seem equally incapable of absorbing the malignant hæmolytic amboceptor as illustrated by the following experiment, which also serves to bring out another point—namely, that the blood from some cases of malignant disease, though itself showing no appreciable hæmolysis, may yet furnish red cells which are resistant to other hæmolytic sera. Inactivated hæmolytic serum from a cancer of the breast was placed in three tubes—A, B, and C. Tube A saturated with my washed cells; tube B with cells from a boy with phthisis; and tube C with cells from a cancer of the œsophagus (whose serum was not hæmolytic). After cooling for half an hour the tubes were centrifugalised into serum and corpuscles, the former being placed in tubes A1, B1, and C1; the latter, after washing, into tubes A2, B2, and C2. Tubes A1, B1, and C1 were reactivated with fresh normal serum and to each was added washed normal corpuscles. Fresh normal serum was added to tubes A2, B2, and C2, and they were all incubated two hours. Hæmolysis occurred in tubes A2, B1, and C1, but not in A1, B2, or C2.

Deterioration of Hæmolytic Sera.

If a hæmolytic serum be kept sealed up in glass capsules it is found to lose its power of laking normal corpuscles in a few days (within a week), but its power may be restored by the addition of fresh normal serum, though not if the fresh normal serum has been inactivated by heat. This loss of activity is therefore due to absence of complement which is altered by keeping just as it is by exposure to a temperature of 55° C., that is to say, the complement is not destroyed but is changed in such a way that though it has lost its power of producing hæmolysis it is capable of acting on a mixture of amboceptor and red cells at body temperature and so preventing hæmolysis on the subsequent addition of fresh complement. The following is the experiment. Ten-day old hæmolytic serum was saturated with normal corpuscles in two tubes, A and B. A was placed in the incubator for half an hour; B was kept in the cold for the same length of time. They were then centrifugalised and the sera pipetted into tubes A1 and B1, the corpuscles being washed and placed in tubes A2 and B2. Fresh normal serum and washed normal corpuscles were added to tubes A1 and B1, and fresh normal serum to tubes A2 and B2. After half an hour's incubation hæmolysis had occurred in B2, but not in the other three tubes.

I have found the hæmolytic amboceptor to be active one month after being drawn; it is thus possible to keep a supply of a known hæmolytic serum at hand which, when reactivated, may be used for testing the resistance of red corpuscles.

The Hæmolytic Test in Vivo.

A year ago Elsberg conceived the possibility of a cutaneous hæmolytic test. His idea was that if normal corpuscles were injected beneath the skin of a patient with hæmolytic serum they would be laked and might produce a visible discolouration of the skin. In a recent paper embodying the results of a number of tests carried out on these lines he states that 77·5 per cent. of 80 cases of carcinoma (or 90 per cent. excluding the very advanced cases) gave a positive skin reaction, while 94 per cent. of the negative reactions

were in patients free from carcinoma. I have, so far, only tried this test in six patients, all with negative results. Three of these had sera which, *in vitro*, hæmolysed the corpuscles injected.

Conclusions.

It is evident that the possession of iso-hæmolysins is very far from being pathognomonic of cancer. But then very few signs of the disease in its curable stages will bear this interpretation. A reaction which is positive in 50 per cent. of patients with cancer deserves, I think, to be weighed in the balance with other facts in the endeavour to arrive at a diagnosis. The only other conditions likely to be confounded with cancer in which hæmolysis is frequently met with are tuberculosis and pernicious anæmia, especially the former. In such cases, if hæmolysis be proved, it is possible that one of the forms of tuberculin reaction would be of value. A negative hæmolytic reaction can, of course, carry no weight.

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Hull.

FURTHER OBSERVATIONS UPON TYPHOID CARRIERS.[1]

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SINCE the publication of the last report[2] we have investigated several methods of treatment and have made daily examinations[3] of the excreta of another typhoid carrier for a period of 15 months. The results obtained appear to justify the prolonged study of one particular case, and to suggest that some of the conclusions and recommendations of those who claim successful eradication of the typhoid bacillus from the human tissues by means of this or that method of treatment would be modified or withdrawn were the carriers subjected to more rigorous and continued examinations.

These daily examinations made such great demands upon our time that we were compelled to limit the methods employed. Consequently, we were unable to make any experiments upon the bactericidal, or opsonic, properties of the blood serum and had to confine our observations to the enumeration of the typhoid organisms in fæces and urine, to the agglutinin contents of the serum, and to the action of therapeutic agents.

[1] D. S. Davies is responsible for the public health aspect of the case, J. Fletcher for the clinical observations and collection of material, and I. Walker Hall and E. Emrys-Roberts for the bacteriological examinations.

[2] THE LANCET, Nov. 28th, 1908, p. 1585.

[3] There were several occasions when the daily sample did not reach us owing to some difficulty in transport, but for practical purposes the phrase is, perhaps, permissible. The exact dates are given in a separate report to the health committee of the Bristol corporation.

The Action of Lactic Acid Bacilli upon B. typhosus and B. coli.

Prior to the discovery of our further typhoid carrier, one of us (I. W. H.) examined some 15 strains of lactic acid bacilli, and a number of yeasts, in order to determine the inhibiting action of these organisms upon the typhoid and coli strains isolated from the carriers previously reported upon. A summary of the results shows that while varying degrees of inhibition of coli growth were obtained, the inhibitory effect upon the typhoid bacilli was very slight—practically *nil*. This finding is in accord with the experience of some who have given the soured milk therapy a prolonged trial. It suggests that in those reported cases in which the typhoid bacilli disappeared from the excreta after a course of this treatment, the typhoid organisms were of an attenuated type, or that the disappearance of the typhoid bacilli from the excretions was a natural event rather than an effect of the therapy. It lies near to hand, also, to think that the latent bacillary period may have exceeded the period of examination in these cases. As yet the data for defining these periods are too few.

The Present Carrier Case.

X. Y., a female, aged 33 years, had typhoid fever in July, 1905.
In 1905, September, her sister had an attack of typhoid fever.
" " December, her brother and father had typhoid fever.
" 1907, July, another sister had typhoid fever.
" " X. Y. took a situation as cook. In July of the same year the parlour-maid and housemaid were attacked by the same disease.
" 1908, September, her kitchenmaid had typhoid fever.
" " December, a nurse who was looking after the carrier patient developed typhoid fever. (X. Y. had been admitted voluntarily into the Bristol General Hospital under Professor J. Michell Clarke.)

While in the Bristol General Hospital in 1908 typhoid bacilli were identified and isolated from her urine, and upon two occasions from her fæces, while her blood serum gave good agglutination reactions. She was later transferred to the Bristol Ham Green Fever Hospital for further observations. The organisms disappeared from the urine on April 13th, 1909, and the agglutinative power of the blood serum fell gradually during 1909. Although daily examinations of the fæces have been made throughout no further excretion of typhoid bacilli has occurred, and it is probable that the two early findings were due to contamination of the fæces by urine. The carrier has therefore been classed as one of the urinary type.

No typhoid organisms appeared in the urine during the remainder of 1909, but on Jan. 4th, 1910. typhoid bacilli appeared in the urine and the agglutinating power of the blood commenced to rise. The organisms continued to be excreted until Feb. 27th, 1910. Since then, although the urine has contained many coliform and other organisms, typhoid bacilli have been absent.

Clinical course.—On admission to the Bristol General Hospital on Nov. 28th, 1908, under Professor Michell Clarke, the general condition of the carrier was fair, the only symptom complained of being an occasional throbbing in the abdomen. She was somewhat thin, but the thoracic and abdominal organs were healthy. A trace of albumin was present in the urine. On removal to Ham Green Hospital on Jan. 26th, 1909, under Dr. D. S. Davies and Dr. J. Fletcher, she continued in fair health and gradually gained in weight. The slight albuminuria persisted. At the commencement of 1910, when typhoid bacilli reappeared in the urine—the patient was not made aware of the fact—she complained of slight malaise, a "crampy" feeling in the lower part of the abdomen, and pain across the small of the back. There were also occasional headache and vomiting. About the middle of March the symptoms disappeared. From January to March she lost weight but regained the loss during April. Throughout there has been neither bladder pain nor pain during micturition, nor increased frequency.

Temperature.—This has been subnormal in type, varying from 97° (morning) to 98° F. (evening). When the vaccine injections reached a dose of 1000 millions there was a slight rise to 98°–98 5°, persisting for 14 days. On Jan. 9th, 1910, about a week after the typhoid bacilli appeared in the urine, the temperature gradually rose to 99 4° and fell within 14 days to its usual level. Since then it has remained about 97·5°–98 5°.

Collection of material and methods.—These details call for mention here only because of the difficulties of inhibiting bacterial growth in human excreta. Ham Green Hospital is situated some distance from our laboratories and we were

TABLE I.—*1909. Excretion of Typhoid Bacilli Under urotropine 7½ grains daily*

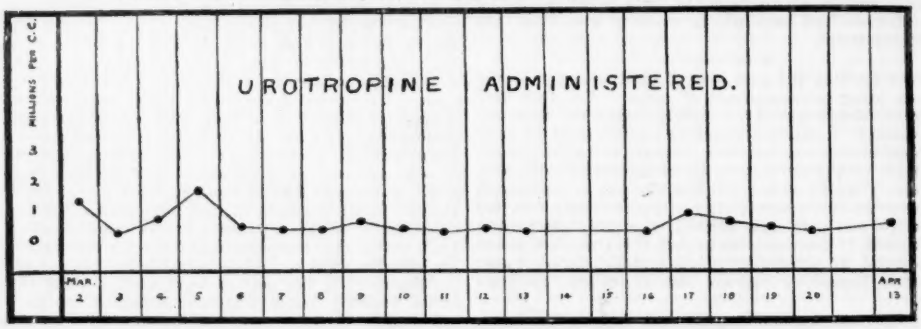


TABLE II.—*1910. Excretion of Typhoid Bacilli (after Six Months' Vaccine Treatment.)*

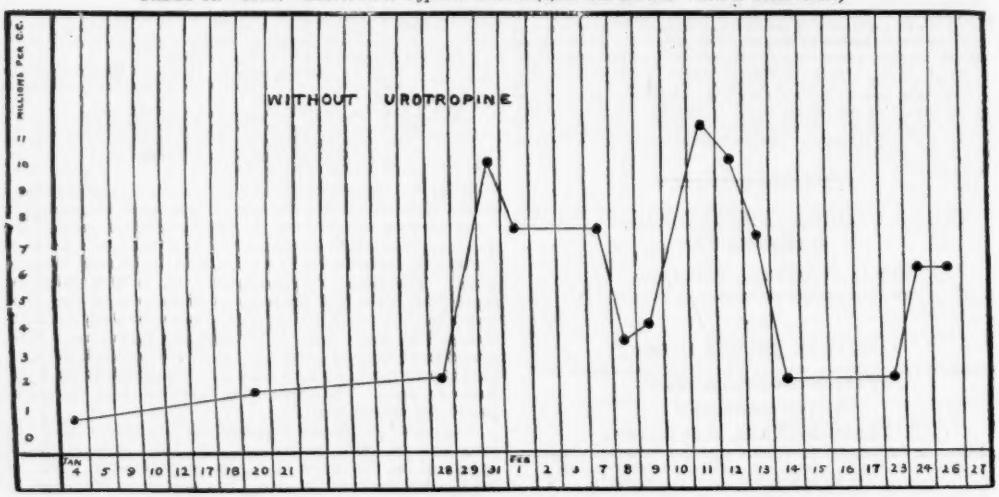
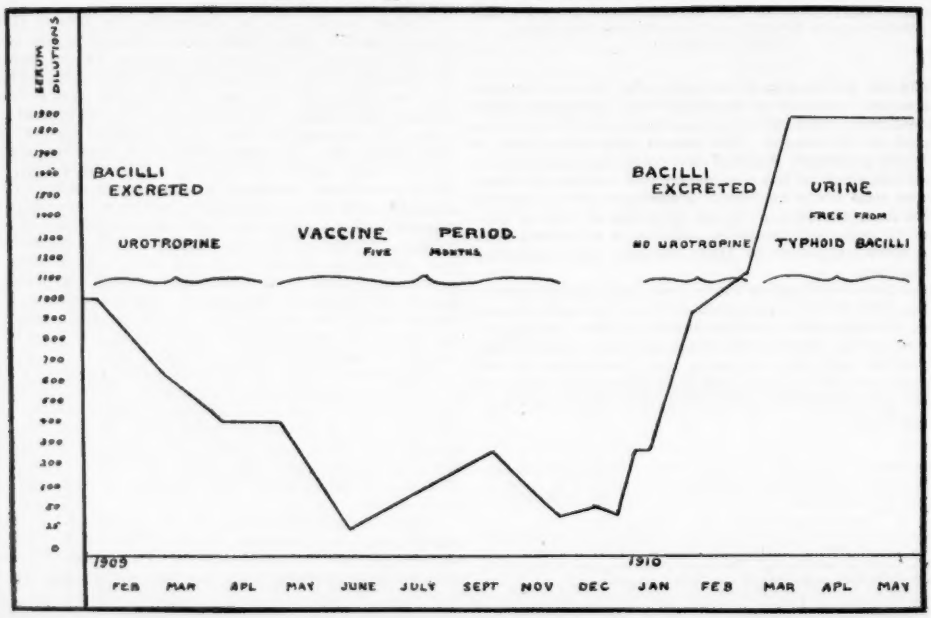


TABLE III.—*Agglutinins. Curve for 15 Months.*



compelled to devise some means of cold storage transmission. Unfortunately, it was found impossible to carry out our ideas owing to the difficulty of obtaining ice in a country place, and the samples of urine were therefore sent to us in boxes lined with felt but minus ice. In spite of this, we are convinced that the enumeration of typhoid bacilli in urine, however carefully carried out, is associated with a number of fallacies in addition to the "personal equation," and hence we are compelled to regard our figures simply as rough comparative calculations.

Although we have tried the several recently devised forms of differential media, we have obtained our best results with those of MacConkey and Conradi and Drigalski, and with these we have worked throughout. When examining the urine we have employed dilution methods combined with surface plating on solid media, and in the investigation of the stools we have always used the entire stool collected in parchment and stored in stoneware jars. The typhoid organisms have been isolated, frequently compared freely with other strains, and tested against standard anti-serums.

Results and Observations.

The results of the daily examinations may be discussed more advantageously in relation to the objects in view rather than presented in tabular form. We may, therefore, consider the elimination of bacilli with regard to treatment, and the evidence of the reaction of the tissue to the typhoid bacilli.

The effect of drugs on the bacillary output.—Under this heading we are able to compare the number of bacilli excreted during two separate periods—viz., January to April, 1909, and January to April, 1910.

During the 1909 period, urotropine (7½ grains twice, thrice, and four times daily) was given continuously. In the 1910 attack neither drug nor other treatment was attempted. The results are appended in Tables I. and II.

In the second period there was a gradual rise in the number of organisms excreted, a fall succeeded by a further rise, and another fall followed by a slight rise and a sudden stoppage. In the first period the output was less and practically equal throughout.

In both instances the period of excretion was about the same. The urotropine appears, therefore, to have limited the number of organisms per cubic centimetre, but not to have reduced the time during which the processes of tissue irritation and bacterial proliferation were paramount. On both occasions the excretion ceased when the proliferation and virulence of the organism were limited by tissue changes, a point which will be evident on inspection of the rise in the agglutinin curve shown in Table III.

When the 1909 bacillary excretion terminated either naturally or through the action of urotropine, we decided to use an autogenous vaccine as a prophylactic measure.

Vaccine.—Accordingly on April 21st, 1909, we injected a dose of 50,000 dead typhoid bacilli at intervals of five days. No reaction was produced. After three injections the dose was increased to 75,000, 100,000, 150,000, and 200,000 bacilli. On May 14th the injection contained 500,000 organisms, and the patient complained of headache and sickness for two days after each injection. The temperature was not affected. The dose was increased gradually and on June 13th it had reached 50 millions. Henceforth there were local redness and swelling, but the headache and sickness did not recur, neither when 100 millions were given nor afterwards. At the end of August the dosage was increased to 1000 millions, and coincident with the third dose the temperature for the first time rose one degree. This rise was maintained for about seven days; subsequent injections were not followed by any temperature changes. After eight weekly doses of 1000 millions the injections were discontinued on Sept. 29th, 1909.

At this time the bacillus coli appeared in the urine, and treatment by coli vaccine was directed towards its removal. The measures adopted were not entirely successful, and the organism continued to be excreted in small numbers up to the period of their replacement by typhoid bacilli.

While it cannot be denied that this course of vaccination produced a slight rise in the agglutinins of the patient's blood serum and may have suspended the July "effective period" to which she was prone, there is no doubt that it did not effect a removal of the typhoid organism from the tissues, although in November we were led to hope that an interval of seven months freedom from typhoid organisms indicated an actual cure.

Further course of drugs.—After the apparent cessation of the bacillary excretion in February, 1910, an attempt was made to encourage the "washing out" of any remaining organisms by administering a course of potassium citrate. Three weeks of this form of treatment did not effect any further expulsion of the typhoid organisms.

The evidences of tissue reaction.—The agglutinin content of the blood was determined in periods of four days each about every fortnight. In order to make the observations roughly comparative the following method was adopted:—

A large quantity of typhoid bacillary emulsion was prepared from a well-tested laboratory strain according to the technique recommended by Dreyer.[4] This was roughly standardised by counting as in the preparation of vaccines, and the same measured quantity of the emulsion was used throughout the series of determinations. The serum was diluted and used within 24 hours of its collection. The readings were made after incubation at 50° C. for two hours, and confirmed after standing for 24 hours. In cases of doubt microscopical and saturation methods were employed.

The accompanying diagram (Table III.) shows the results obtained and their probable relation to the factors of the case.

In February, 1909, the agglutination was complete in 1 in 1000 dilution. When the bacillary excretion ceased the dilution was 1 : 500. During the period of vaccine injection the dilution fell gradually to 1 : 25 on June 12th. When the dose injected reached 1000 millions there was a slight rise to 1 : 230–1 : 460. When the vaccine injections were suspended onwards to Dec. 22nd the amount of agglutinin diminished to 1 : 25. On Dec. 30th there was a rise to 1 : 250, and this was succeeded by a further rise to 1 : 920 on Jan. 21st, 1910, to 1 : 1500 by Feb. 14th, to 1 : 1860 on March 16th, and the same dilution was present in May and June.

On Jan. 28th there was a good reaction (1 : 50) with organisms isolated from the patient's urine a few days previously. The excretion of typhoid bacilli stopped on Feb. 26th, 1910.

It has been asked whether the Widal reaction might be applied as a routine measure in dealing with typhoid convalescents and suspected carriers. Although we are paying considerable attention to this point, we feel that the data already accumulated are insufficient to permit of the slightest attempt at generalisation or deduction.

Location of focus.—In this case it is not very probable that the focus is a renal one. Pus was rarely present, and then only in small amounts. Segregation of urine was not attempted. We have no data affording indications of a possible focus, and we cannot exclude the kidney altogether, but on account of the long intermittent periods, the absence of pus, and the location of the symptoms, we are disposed to consider the lesion as extra-renal.

Remarks.

Were we to venture upon any statement based upon the experience gained in this and other cases it would take the form of emphasising the necessity for keeping a register of all typhoid convalescents and making frequent bacteriological examination of their excreta, and recommending the further general use of hygienic measures suggested in one of our previous communications. In Bristol we are endeavouring to carry out both these suggestions.

The results we here state make us a little hesitant in accepting the permanency of some of the "cures" already published, since we fear that had the excreta been examined every day for a year or so the cases might have yielded similar results to this one.

[4] Dreyer: Journal of Pathology, 1909, vol. xiii., p. 331.

THE MEDICAL DIRECTORY.—Messrs. J. and A. Churchill ask us to state that the circular sent annually to each member of the profession will be posted on Sept. 1st. It will be recollected that this is a month later than was recently the case. The change of date has proved to be an advantage in that the making of applications for returns during the holiday month of August is avoided. Practitioners are asked to return the circular without any delay. The "Medical Directory" will be published before Christmas, and it will be found that the climatological and balneological section by Mr. Norman Hay Forbes, F.R.C.S. Edin., has been extended to include continental as well as British spas and health resorts

RHINOSPORIDIUM KINEALYI IN UNUSUAL SITUATIONS.

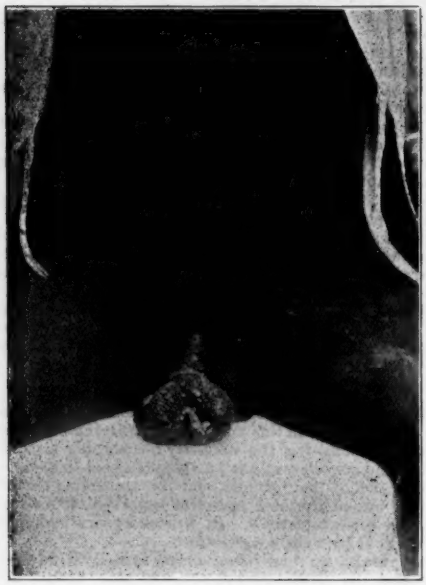
BY A. C. INGRAM, M.D., B.C. CANTAB., M.R.C.S. ENG., L.R.C.P. LOND.,

CAPTAIN, INDIAN MEDICAL SERVICE; ACTING PROFESSOR OF PATHOLOGY, MADRAS MEDICAL COLLEGE.

DURING February and March, 1909, I received two specimens—one a conjunctival polypus, and the other a papilloma of the penis—which proved to be papillomatous growths full of typical cysts of Rhinosporidium Kinealyi, a parasite which has, I believe, never hitherto been recorded save in the nose and nasopharynx. Captain H. Kirkpatrick, I.M.S., informs me that the conjunctival polypus originated primarily in the fornix conjunctivæ, and that there was no growth in the nose or nasopharynx. I have to thank Captain Kirkpatrick, who is publishing a more detailed account, for permission to publish this note.

The second growth was removed by Captain R. D. Willcocks, I.M.S., and he has very kindly furnished me with the following clinical description:—"The tip of the penis was enlarged to about the size of a baby's fist and presented a most peculiar cauliflower polypoid appearance, due to the presence of a large number of firm, irregular, but smooth, rounded polypoid growths, springing apparently from the urethral orifice and from the surface of the glans penis. The surface of the growths was quite smooth and they were pinkish in colour. There was no ulceration or induration.

FIG. 1.



Papilloma of penis caused by Rhinosporidium Kinealyi (Captain Willcocks's case).

The meatus was situated in the middle of the cauliflower growth and was dilated, so that the urethra admitted a finger for a distance of two inches. There was no pain or tenderness, no difficulty of micturition, and no enlargement of lymphatic glands." A history of irritation of the meatus about seven or eight years ago was obtained, followed by the appearance of two growths at the meatus six years ago. Gradually more growths appeared around the meatus and the condition spread slowly until almost the whole glans penis became involved.

A section of one of the growths showed it to be a papillomatous formation full of typical cysts of Rhinosporidium Kinealyi, exactly resembling the specimens described and figured by Beatty, and Minchin and Fanthum; the structure of the tissues corresponded in every way, save that the epithelium was derived from the epithelium of the glans penis. Captain Willcocks has kindly furnished me with a photograph of this case (Fig. 1), and I have had a photograph taken of a vertical section of the penis after removal (Fig. 2), with a thick strand of horsehair inserted in the urethra.

FIG. 2.

Vertical section of preserved specimen of papilloma of the penis, due to Rhinosporidium Kinealyi. A, upper limit of the growth in the urethra.

Recently I have taken the opportunity of examining in a normal salt solution fresh specimens of a nasopharyngeal polypus caused by the Rhinosporidium Kinealyi. I find that the cysts appear to be all perfectly rounded, and that the irregular shape in preserved specimens is due to the action of the preserving agent.

I can also confirm Major F. O'Kinealy's observation o the presence of a pore in the wall of the cysts. Half and three-quarter grown cysts show the pore best, and there appears to be a distinct thickening of the cyst wall internally around the pore. A diagram of a pore sketched from a cyst magnified about 500 times is appended (Fig. 3). I was unable to

FIG. 3.

Diagram of part of the cyst wall of Rhinosporidium Kinealyi, showing the pore. × about 500 diameters.

find a pore in the smallest cysts. On compressing the large cysts they ruptured, and in every case the rupture appeared to commence at and spread from the pore. I observed also that in the large cysts the largest and most mature pansporoblasts were always situated close to the pore, and that the protoplasmic layer was thickest over the opposite pole of the cyst, and appeared to extend forwards over two-thirds of the cyst wall only. It would appear that on the penis the growth spreads much more slowly than it does in the nose and nasopharynx, and that it only spreads superficially.

In the records of the Pathological Department I have traced in all six cases of this condition, and all but one of those traceable appear to have come from villages on the Malabar coast. One man informed me that 8 or 10 people in his village suffered from the same condition (nasal polypus) and that there were other cases of the same condition in four adjacent villages.

Just as I am sending this I have received another conjunctival polypus which contains cysts of Rhinosporidium Kinealyi from Captain Kirkpatrick.

Madras.

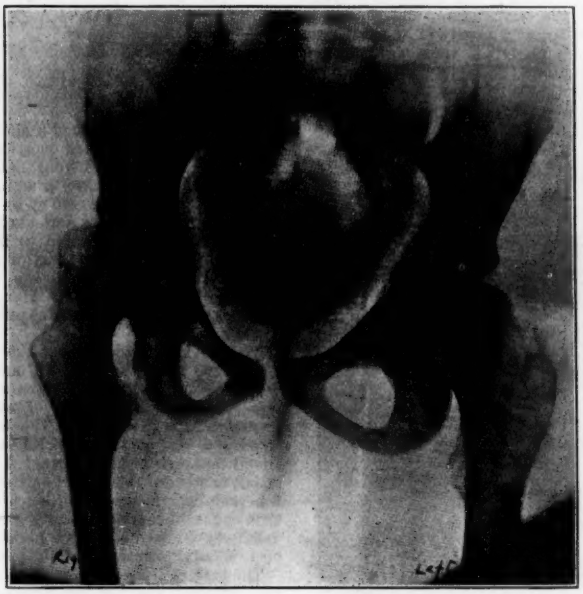
DORSET COUNTY COUNCIL AND THE CARE OF SCHOOL CHILDREN'S TEETH.—At the last quarterly meeting of the Dorset county council held at Dorchester it was reported that Miss Colfox of Bridport had given £300 for the purpose of starting a scheme for healing the dental defects of the school children.

A CASE OF CONGENITAL COXA VALGA.

BY J. JACKSON CLARKE, M.B. LOND., F.R.C.S. ENG.,
SENIOR SURGEON TO THE HAMPSTEAD AND NORTH-WEST LONDON HOSPITAL, AND SURGEON TO THE ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.

COXA VALGA of a degree sufficient to produce marked lameness is a rarity, but the importance of diagnosing the condition has increased now that congenital dislocation of the hip, for which it is easily mistaken, has been brought within the range of operative surgery.

A glance at the skiagram will suffice to identify it as belonging to a very pronounced case of coxa valga, the direction of the neck of the right femur being almost the same as that of the shaft, and on the left side the neck of the bone makes an obviously more obtuse angle with the shaft than the maximal normal angle.[1] The skiagram was taken by Dr. S. Melville, radiographer to the Royal National Orthopædic Hospital. There is no striking abnormality in the child's appearance, but on close inspection a flatness of the region of the great trochanters is noticed. In profile a moderate degree of lordosis is seen in the lumbar region. On seeing the patient walk even surgeons of experience might put the case down as one of congenital dislocation. For my own part, only when I applied the tape to Nélaton's line did the diagnosis of coxa valga occur to me, the right great trochanter being a little below Nélaton's line. The chief diagnostic document is the skiagram. The patient can adduct and abduct the limbs to a normal degree; the range of rotation both inwards and outwards is excessive. The patient can stand easily on either leg, though in doing so she leans to the same side as the leg she stands on, and raises the opposite side of the pelvis. This is the converse of what is known as Trendelenburg's sign as seen in congenital dislocation of the hip.



Skiagram of both hip-joints taken with inverted limbs: the best position for showing the necks of the femurs.

History.—The birth was by head presentation, and the patient appears to have been quite healthy as an infant, her mother nursing her for "longer than the usual time." Some peculiarity in the right leg was noticed when she was nine months old, and she did not walk until about three years of age, and then she was continually falling down and the right leg required to be supported with irons on account of weakness of the ankle. Her mother writes that the right leg was much thinner than the left until she was turned six years.

This history and the absence of any sign of rickets or other disease, local or general, proves the coxa valga to be of congenital origin, an extreme rarity when, as in the present case, it is not combined with congenital dislocation of the hip.

Treatment.—I have considered this carefully with Dr. W. H. B. Brook of Lincoln, who sent the patient to me. The child is perfectly healthy and likely to bear operation well; her walk is distressing, and we think that an operation to improve the gait is called for. In similar cases removal of a wedge from the neck of the femur has been recommended. Operation at this position would attack the deformity at its seat, but it would have the drawback of leaving fragments which are not easily fixed by splints or screws; the section of bone, moreover, would lie so near the joint that a troublesome ankylosis might be expected to ensue. The patient under consideration is too old for fixation of the limb in the adducted position to produce any effect on the form of the femoral necks. The decision rests in favour of subtrochanteric osteotomy with removal of a wedge of bone, base inwards. The corresponding operation, with the base of the wedge outwards, I have done many times without mishap. In every case I have securely reunited the fragments of bone by two stout silver wires. By doing the subtrochanteric operation subperiosteally, and dividing the bone from within by a Gighli's saw, the danger of wounding an artery is avoided. In the present instance I operated on the right femur first, owing to the difficulty of nursing a patient with both thighs in the adducted position. The result of this operation, which I did two months ago, is all that could be desired: the union is firm with the shaft of the femur slightly bowed, and the patient can already walk with assistance. A case of coxa valga complicated by partial ankylosis of the hips and treated by subtrochanteric osteotomy has recently been recorded.[2]

Portland-place, W.

[1] The angle made by the intersection of the axis of the shaft and that of the neck of the femur is perhaps best named the *angle of inclination*. It varies within normal limits between 128° and 125°. An increase of this angle constitutes coxa valga, a diminution coxa vara. As in coxa vara so in coxa valga, to the alteration of the inclination of the femoral neck to the shaft may be superadded an alteration in what is known as the *angle of declination*, i.e., the angle made by the projection of the axis of the neck with the transverse axis of the condyles of the femur; this angle is normally about 12°, and is increased when the neck of the femur curves forwards, and conversely; see a paper, with references to literature, by A. H. Tubby (Brit. Med. Jour., July 25th, 1908). Further, the neck of the femur may be twisted on its own axis, or otherwise deformed.

[2] Seton Pringle: Medical Press and Circular, June 1st, 1910.

TEIGNMOUTH (DEVON) HOSPITAL.—As a result of the recent "hospital fête," which was held at Teignmouth, the sum of £258 has been raised for the institution.

ROYAL DEVON AND EXETER HOSPITAL, EXETER.—At the last meeting of the court of governors of the Royal Devon and Exeter Hospital it was reported that the balance against the institution at the close of June was £690, comparing unfavourably with £2082 for the corresponding period of 1909. It was stated that legacies to the amount of £1850 had been bequeathed to the charity, so that at the end of the present year it is hoped that the financial position of the hospital will be sound.

A CASE OF LEPROSY IN A WHITE PERSON ASSOCIATED WITH INSANITY.

BY ROBERT JONES, M.D. LOND., F.R.C.P. LOND.;
AND
ROBERT W. J. PEARSON, L.R.C.P., L.R.C.S. EDIN.,
OF CLAYBURY ASYLUM, LONDON.

THE patient, a thin, sallow, dark-haired English girl, aged 21 years, born and brought up in British Guiana, was received into Claybury Asylum in December, 1909. The medical certificate described her as silly and childish, laughing at imaginary persons and making meaningless grimaces towards them. She had become spiteful to others and was at times noisy and excited. Her habits were defective and she "spat all over the place."

On admission she was examined by one of us and Dr. G. H. Harper-Smith, and was described as being in poor physical condition, but nothing abnormal was found in the heart, lungs, or circulation; the alimentary system was normal, as was also the temperature, and there were no enlarged glands. The specific gravity of the urine was 1010, the reaction was acid, and it contained no albumin or sugar. She presented irregular tubercular nodules on the face; the tip of the nose was similar, and there was a large nodule on the left cheek and another almost directly below this on the left corner of the mouth. There were several other smaller ones on both cheeks about the mouth. (See Fig. 1.) The skin of the face presented the livid appearance

FIG. 1.

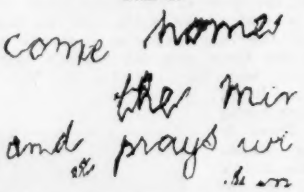
Leper's face showing nodules on the cheeks, nose, and forehead, and thickening of supra-orbital prominences.

said to be peculiar to lepers, and on the right cheek and temple it may be described as not unlike the bloom of the grape. In addition to those on the face she also had several nodules on the nerves of the forearms, and some dirty white anæsthetic patches on both legs and arms. These patches were insensitive to touch, but the amount of anæsthesia was difficult to estimate owing to her mental state. There was slight leprous ulceration on the left foot on its outer aspect, and also on the toes of this foot.

On examination the motor system appeared to be poorly developed, but there was no paresis present. Coördination was subnormal. (See Fig. 2.) Owing to the mental confusion it was nearly impossible to gauge exactly the reaction of the sense of touch or of the other senses; the olfactory sense was normal. The pupillary reactions (iridoplegia, consensual and sympathetic), so far as could be ascertained, were normal. The superficial reflexes were affected, but the deep reflexes were normal, and there was no ankle clonus or extensor reflex.

The patient's mental state on admission was that of confusional insanity with mild dementia. She was lost as to her surroundings, having no correct knowledge of time or place, and she did not recognise nor realise who those about her were. Questions put to her elicited a vacant smile. She

FIG. 2.



Reproduction of photograph of writing showing the incoördination.

made no answer when asked if she had been abroad or where she came from. Repeated questions and an interval elicited an answer to "What's your name?" She showed some negativism. She resented examination and preferred lying in bed with her face covered up by the bedclothes. She was defective in her habits and exercised no control over the sphincters. There appeared to be some impairment of the general intelligence, as well as of the memory and emotions. She had formerly passed the Cambridge Senior Local Examination with honours. Her mental state appeared to fall in with what is described as primary dementia or dementia præcox.

The previous history is that the patient became a leper in Demerara, where she resided, and that she was the only white person in British Guiana at the time suffering from leprosy, although members of other white families were known to have so suffered. The leprosy was only discovered when she was at school in England. It was stated by a friend that a sister had contracted leprosy and had died from it, but another of the patient's sisters stated she had died from tuberculosis, which was verified upon post-mortem examination. No history of insanity was ascertained, and it is definitely denied on the mother's side, but the father had been found drowned, his affairs previously being embarrassed.

The patient herself had come to London for treatment and had attended the London Homœopathic Hospital. It was ascertained from the resident medical officer there that she had been an in-patient for several weeks, and subsequently for some four weeks had been an out-patient; that having suddenly become feverish and delirious she was again received as an in-patient. It became evident from her strange manner that she was mentally affected, excitement and violence occurred, and she attempted to get out of the window. Under the circumstances she had to be handed over to the public authorities, and was finally received into Claybury.

The treatment at the Homœopathic Hospital was directed against the leprosy until the mental symptoms appeared. She received an injection of nastin B. 1 weekly, and the medical officer (Mr. H. Fergie Woods) stated that the injections had no apparent effect upon the nodular growths or upon her mental health. As regards the treatment of the excitement the medical officer writes: "At first the homœopathic remedies controlled her, later hypodermics of morphia seemed to have very little effect, and latterly nothing much seems to quiet her."

Shortly after admission into Claybury the left foot showed signs of ulceration on its outer side, the toes also became granular, and the surface discharged. It is stated by Dr. J. M. H. MacLeod "that leprous atrophic tissue is very liable to infection through pyogenic micro-organisms, and that the weakly resistent skin tends to break down through the formation of unhealthy ulcers, and that this state occurs

in consequence of the devitalising effects of the leprous processes."

The ulcers were treated with a 10 per cent. ointment of chaulmoogra oil in lard. The X rays were also used for the tubercles and nodules on the face, but the patient was so restless and resistive that this treatment had to be discontinued. We then began to administer Professor G. Deycke Pasha's nastin B. 1 in doses of 1 c.c. subcutaneously once a week, and after a time this was supplemented with 10 minims chaulmoogra oil in 1 drachm of Scott's emulsion internally three times a day. The oil has been gradually increased to 25 minims three times a day, and it has been well tolerated. It is proposed to still further increase it up to a drachm three times a day. She is also receiving 1-60th of a grain of strychnia three times a day.

The reaction to the nastin B. 1 treatment was very slight and only on one occasion was there a rise of temperature—viz., from 98·4° to 99·2° F. four hours after the injection. When the nastin was injected directly into the largest nodule on the face there were redness and swelling of the nodule four hours afterwards, but no rise in temperature occurred, and afterwards the nodule remained its ordinary size. The technique of the injections was that described by Dr. J. Ashburton Thompson.[1]

As is well known, Deycke cultivated a streptothrix (but not the lepra bacillus) from the nodules of leprous patients. In this cultivation a well-defined neutral fat appears which is extracted with ether and called "nastin." When this nastin is combined with benzoyl chloride and injected into leprous patients it is stated to produce bacteriolysis and an arrest of the leprous process. The sterile ampoules were obtained from Merck, and the contents (proportionately 1 part nastin in 100 parts of hot sterile olive oil) were injected into the subcutaneous tissue of the arm but never into the deeper structures. No unfavourable symptoms followed the use of the preparation and no inflammation of the eyes has occurred.

The treatment has now lasted for five months and we do not think that there has been any general mental or bodily improvement. The leprous process has not been arrested, the nodules not only remain almost as they were, but others have appeared on the ears, and more ulcers are seen now on the foot through the breaking down of nodules. Yet there are several points of interest in the case.

1. *The means of conveying the contagion.*—There are several modes of invasion, and it is suggested (Macleod) that by the nose and upper respiratory tract is the most common. The mouth, through the tonsils, &c., is another, the bacilli being sometimes found in the sputum. The alimentary canal is also looked upon as a possible channel, but, as the lepra bacillus of Hansen has never been discovered as a saprophytic growth outside the body, this channel, except through the contagion of human milk for infants at the breast, is not a frequent one. The skin, after injury or after dermatitis, may possibly be a means of infection, and it is generally agreed that the genital tract may afford access for the entry of the bacillus.

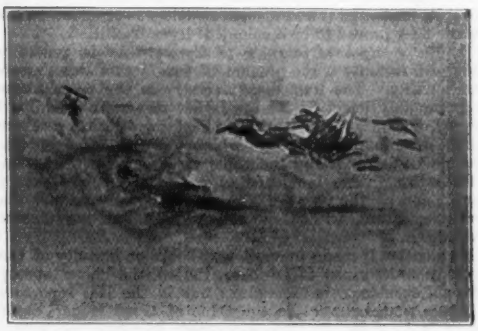
Our patient's sister suggests two possible channels: (*a*) Some cowkeepers in Demerara employ East Indian coolies to milk their cows; amongst these are some leprous ones, and such labour is cheaper to hire. Also there is local black labour, and some of these coloured natives also suffer from leprosy which is undiscovered. It is asserted that the patient may have drunk milk contaminated in this way. (*b*) That the native washerwoman who washed her clothes had a leprous son who assisted with the washing, and thus infected the clothes which conveyed the infection to our patient.

As the period of incubation of leprosy is anything between 3 and 20 years, it is possible that our patient may have been invaded in one of several other ways. It is stated that the descendants of mixed marriages (white and coloured) are more subject to leprosy than those of pure European descent. Our patient is not stated to be of coloured origin, and there are no such possibilities from her general appearance.

As with sleeping sickness and malaria, the comparative immunity of white persons is probably due to greater cleanliness and the adoption of a more careful and hygienic habit of life. No insect, however, has been known to be a carrier of the lepra bacillus and none of the lower animals are susceptible, although the bacillus has been inoculated into guinea-pigs, rabbits, and monkeys, and no immunising serum has been successfully prepared up to the present for lepers from lepromatous nodules analogous in its effects to tuberculin for tubercular persons.

2. At the suggestion of Dr. F. W. Mott, some blood was taken by Dr. J. P. Candler and one of us from the basilic vein, and the Wassermann reaction was ascertained by Dr. H. Dean of the Lister Institute. Contrary to the usual experience, which states that the Wassermann reaction is positive in cases of leprosy as well as in syphilis, the opposite occurred, and no deviation of the complement took place, the reaction being negative.

FIG. 3.



Micro-photograph of lepra bacilli in smear of nasal mucus. Stained by Ziehl-Neelsen method. × 1650 diameters.

Some nasal mucus was collected by Dr. Candler at the same time on sterile swabs. The smear was stained by the Ziehl-Neelsen method and numerous lepra bacilli were found (see Fig. 3). Further, one of us excised one of the nodules on the face and colonies of the bacilli were shown in the

FIG. 4.

Micro-photograph of skin from a leprous nodule showing clumps of lepra bacilli in the cells and lymphatics of the cutis vera. Note that there are no bacilli in the epidermis. Stained by Ziehl-Neelsen method. × 350 diameters.

[1] Brit. Med. Jour., March 5th, 1910.

cells of the subcutaneous tissue, but none in the epidermis, showing that there is no great probability of contamination from an infected to a non-infected person unless the true skin is exposed (see Fig. 4).

The lepra bacillus, although it does not fulfil all the postulates of Koch, is nevertheless present in all cases of leprosy and is not found in other diseases. It possesses characteristics which differentiate it from all other micro-organisms and it is admitted by all authorities to be the specific cause of leprosy. It is an acid-fast bacillus, and it is probable that it belongs to the class of streptotricheæ (Macleod). No medium outside the human body has been discovered on which it will invariably grow. Emil Weil's most successful experiment was by inoculating a hen's egg. He then incubated it and a small nodule was observed on the yelk. This proved to be a colony of lepra bacilli.

3. *The relation of insanity to leprosy.*—As is generally accepted, insanity is the product of two factors—viz., stress and heredity. The immediate ancestry in the present case is presumably defective, for the father may have committed suicide, and there was also the predisposing stress of a severe school examination, added to which was the onset of this chronic disfiguring and incurable disease, which was the "last straw." The incidence of a mental shock of such a nature and at the onset of a promising career in a girl of a sensitive nature, without doubt, precipitated her mental breakdown.

No mention is made in most text-books on insanity of the association described in our case, indeed, the name leprosy does not even occur in the index; but in the last report on "Lepers and Lunatics in the Cape of Good Hope" eight lepers—one a female European—were admitted as insane into Robben Island leper insane wards.

It is stated in the above-named report that chaulmoogra oil had been given with advantage; that some patients were specially treated with liquid extract of red mangrove bark and with "mangrove water" hot baths. Local treatment with "Jagger's roots" had been tried as well as Professor Deycke's nastin B. 1 and B. 0, the latter in the case of four patients (three Europeans), but Mr. Ernest Moon, the chief medical officer of one of the leper colonies, felt it was as yet too early to report results, although he adds that neither a general nor a local reaction followed the injections.

Our best thanks are due to Mr. Charles Geary of Dr. Mott's laboratory for his kindly help in the preparation of the specimens and the micro-photographs.

Claybury, Essex.

FURTHER RESEARCHES INTO THE BACTERIOLOGY OF EPIDEMIC SUMMER DIARRHŒA,

WITH SPECIAL REFERENCE TO THE CLASSIFICATION BY ABSORPTION OF ORGANISMS ISOLATED BELONGING TO THE PARATYPHOID B, SUIPESTIFER GROUP.

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IN the year 1907 we investigated an organism recovered from the heart blood of a case dying from epidemic diarrhœa. The results of our examination into its cultural and other characteristics were published in THE LANCET. Briefly, we were able to allocate the organism to the region of the group Paratyphoid B. It was shown to be a Gram-negative, short, motile bacillus, with readily demonstrable flagella, producing no obvious change in litmus milk; forming gas in media containing mannite, maltose, dulcite, sorbite, glucose, and arabinose; and no gas in media containing lactose, saccharose, raffinose, salicin, inulin, and galactose. The agglutination reactions showed a close relationship with Bacillus paratyphoid B, but none with Bacillus paratyphoid A, Bacillus Gaertner, or Bacillus coli. It was virulent by inoculation for the usual laboratory animals, and gave rise to diarrhœa and wasting when added to the food of puppies. In course of time, we found a gradually developing alkalinity in litmus milk and gas formation in galactose media. Independently this change in litmus milk was observed by Revis[2] in an early culture obtained from us.

On the basis of these modifications we continued our investigations during the year 1908 with material obtained from the City Hospital, Fazakerley. 40 cases were investigated by the following methods: (*a*) In the course of the disease, one to two loopfuls of fæces were emulsified in 10 c.c. of normal saline. Second and third dilutions were made, and from these bile-salt, lactose, neutral red agar plates were streaked; pale colonies were picked off and inoculated into litmus milk. It was found that the best results were obtained in the later stages of the disease. (*b*) Cultures were obtained from post-mortem scrapings of liver, spleen, and intestinal mucosa, and from the heart blood immediately after death. Our experience during the year 1907 had led us to give up the method of blood culture during life.

Of the 40 cases investigated, 17 were discarded, no colonies which did not clot milk being isolated from the plates. From the 28 cases remaining, 162 tubes were obtained. These were roughly differentiated by agglutination with Bacillus F serum (titre: 3000) in a dilution of 1 in 100. 94 tubes from 17 cases showed a positive result, the vast majority being completely agglutinated statim, and all well marked within half an hour. The 68 tubes from 12 cases which showed no agglutination presented considerable variations in their cultural reactions. Nearly all were indol positive. In litmus milk 7 cases showed marked acidity, rapidly developed; in 4 cases no change was observed; and in 1 case there was acid in one tube and no change in others. They were not further investigated. The tubes where agglutination was positive all alkalinised litmus milk with the exceptions noted below, and their sugar reactions were the same as in the case of Bacillus F. At this point owing to a regrettable accident the large majority of our cultures was lost, but it will be noted that the cultural and agglutinative reactions of all the tubes lost give us reason to expect that their fuller examination would have tallied with those that remained.

Cultural reaction.—We were left with 28 tubes from 7 cases, all alkaline in milk after two weeks, except Case 7, consisting of two cultures. These 28 tubes included cultures from fæces, in all 7 cases; scrapings from intestine, liver, and spleen in 2 cases; and in 1 case cultures from heart blood. All showed a Gram-negative, short, motile bacillus, producing gas in mannite, maltose, dulcite, glucose, arabinose, and galactose; and no change in lactose, saccharose, raffinose, salicin, and inulin. These cultural reactions correspond to Bacillus paratyphoid B and to the present condition of Bacillus F. All the tubes showed fluorescence in glucose neutral red broth. The only anomalous reaction, therefore, was the slight permanent acidity in litmus milk in Case 7. In all other cultural, agglutinative, and absorptive tests these two tubes fell in line with others of the series. Lately this permanent acidity has tended to disappear and inoculation into litmus milk after a few daily subcultures on agar usually leads to the development of slight alkalinity.

Agglutination reactions.—The cultural reactions confirm our results of the previous year and demonstrate that the organisms are neither Bacillus typhosus nor Bacillus paratyphoid A, but are intimately related to the paratyphoid B, suipestifer group. Agglutinative tests also with typhoid serum (titre: 2000) and paratyphoid A serum (titre: 3000) showed no agglutination in any beyond 1 in 100. Agglutination with a Gaertner serum (titre: 2000) barely reached 1 in 100, and at once put that organism out of court. It seemed, then, that it only remained to find out to which part of the paratyphoid B group these organisms belonged, and in this work we have to acknowledge our indebtedness to Dr. F. A. Bainbridge and Dr. J. C. G. Ledingham of the Lister Institute, the former for his paper in

[1] Bacillus F: an Organism Obtained in a Case of Epidemic Diarrhœa THE LANCET, Jan. 30th, 1909, p. 301.

[2] C. Revis: The Stability of the Physiological Properties of Coliform Organisms, Centralblatt für Bakteriologie, Parasitologie, und Infektion, Band xxvi., 1910, Hefte 6 and 7, p. 171.

the *Journal of Pathology and Bacteriology*[3] and for information privately supplied, and the latter for cultures. These 28 cultures, when tested against paratyphoid B serum (titre: 3000), Bacillus F serum (titre: 3000), and Bacillus suipestifer serum (titre: 3000) gave agglutination to the limits of the titre. Bacillus suipestifer, Bacillus paratyphoid B, and Bacillus F also were each found to agglutinate to the limit of the serum of the other two. In all cases the microscopic method at laboratory temperature was adopted with a time limit of two hours, a little of the culture being emulsified in the diluted serum. It was therefore quite impossible to differentiate these organisms by agglutination methods alone. We continued the investigation by absorption tests in the hope that these would give us the necessary information.

Absorption reactions.—As the labour entailed was considerable, one culture tube was chosen from each case—from the fæces in Nos. 1, 2, 3, 4, 7, and from the heart in No. 5, and from spleen scrapings in No. 6. An excess of 24-hours old agar growth was added to the agglutinating serum diluted 1 in 200, was shaken for four hours, and then centrifugalised for 12 hours. The supernatant fluid was pipetted off and used for the tests. All necessary controls were made. The results are shown in the accompanying table:—

	Agglutination after absorption.									
	Para. B.	Bac. F.	Bac. Suip.	1	2	3	4	5	6	7
Serum Bac. Para. B. (titre: 5000).										
Absorbed with—										
Bac. para. B.	—	—	—	—	—	—	—	—	—	—
,, Bac. F. ...	+	—	—	—	—	—	—	—	—	—
,, Bac. suip. ...	+	+	—	+	+	+	+	—	—	—
,, Case 1 ...	+	—	—	—	—	—	—	—	—	—
,, ,, 2 ...	+	—	—	—	—	—	—	—	—	—
,, ,, 3 ...	+	—	—	—	—	—	—	—	—	—
,, ,, 4 ...	+	—	—	—	—	—	—	—	—	—
,, ,, 5 ...	+	+	—	+	+	+	+	—	—	—
,, ,, 6 ...	+	+	—	+	+	+	+	—	—	—
,, ,, 7 ...	+	+	—	+	+	+	+	—	—	—
Serum Bac. F. (titre: 6000).										
Absorbed with—										
Bac. F. ...	—	—	—	—	—	—	—	—	—	—
,, Bac. para. B.	—	+	+	+	+	+	+	+	+	+
,, Bac. suip. ...	+	+	—	+	+	+	+	—	—	—
,, Case 1 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 2 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 3 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 4 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 5 ...	+	+	—	+	+	+	+	—	—	—
,, ,, 6 ...	+	+	—	+	+	+	+	—	—	—
,, ,, 7 ...	+	+	—	+	+	+	+	—	—	—
Serum Bac. Suip. (titre: 3000).										
Absorbed with—										
Bac. suip. ...	—	—	—	—	—	—	—	—	—	—
,, Bac. para. B.	—	+	+	+	+	+	+	+	+	+
,, Bac. F. ...	—	—	—	—	—	—	—	—	—	—
,, Case 1 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 2 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 3 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 4 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 5 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 6 ...	—	—	—	—	—	—	—	—	—	—
,, ,, 7 ...	—	—	—	—	—	—	—	—	—	—

It is at once apparent that none of the organisms are identical with Bacillus paratyphoid B, since after absorption of paratyphoid B serum with any of them agglutinative power for paratyphoid B still remains. Further, we are able to divide these 7 cultures into two groups—(*a*) Nos. 1, 2, 3, and 4, which are identical with Bacillus F; and (*b*) Nos. 5, 6, and 7, which are indistinguishable from Bacillus suipestifer or B. aertryck. Absorption of Bacillus F serum brings out precisely the same differentiation. Absorption of Bacillus suipestifer is interesting in that no agglutinative power is left over for any except Bacillus paratyphoid B. If it be permissible to draw any deduction from this, it would appear that all eight cultures (i.e., Nos. 1–7 and Bacillus F) are very much closer to the suipestifer end of the group than to the paratyphoid B end.

In view of these results it becomes necessary to affirm the standard nature of the culture of Bacillus paratyphoid B employed. The source was McWeeney, and in no cultural test did it show any deviation from the ordinary. At the same time, work on absorption lines would tend to make us hesitate to give Bacillus paratyphoid B the title of an entity. It is possible, if not probable, that different strains labelled paratyphoid B by cultural and simple agglutination reactions would show, if tested by methods of absorption, gradations similar to our two groups. An attempt which we made to settle this point failed by reason of the marked way in which all our laboratory strains of paratyphoid B (except McWeeney) clumped in saline control. It is apparent, then, that we have isolated two sets of organisms lying at different points on a line linking up Bacillus paratyphoid B and Bacillus suipestifer, and distinguishable only by absorption tests.

Animal reactions.—All our strains were virulent for guinea-pigs by inoculation, and when added to the food of puppies produced within four days diarrhœa followed by wasting.

Case agglutination reactions.—The agglutination reaction against Bacillus F was done in 54 cases. Of these, 46 were children and 8 were doctors or nurses in attendance upon them who themselves suffered from diarrhœal attacks. Of the children, 18 were negative; 10 positive to 1 in 25; 11 positive to 1 in 50; and 12 to 1 in 100. Of the adults in attendance, all were positive; 3 to 1 in 25 (two slight); 3 to 1 in 50; and 2 to 1 in 100. The most acute cases rapidly dying showed no agglutination at all. In all cases where positive the reaction was most marked in the later stages of the illness. The reaction was tested in 13 of the 17 cases discarded because no colonies which did not coagulate milk were obtained. 11 of these were positive: 2 to 1 in 25; 4 to 1 in 50; and 5 to 1 in 100. This series shows that even where we failed to isolate the organism there was some evidence that it might be the cause of the disease.

By way of control, agglutination reactions were done on 226 cases of miscellaneous disease and healthy individuals. The age in 168 of these was under 6 years. (No inquiry as to their having had a previous attack of diarrhœa was made at the time. The importance of the point, however, appeared to us later, and a further series of 104 miscellaneous cases from the same source was investigated. Under stringent conditions of interrogation, in only 16 instances was it probable that the child had had an earlier attack.) Agglutination was negative in 143; positive to 1 in 25 in 37; and to 1 in 50 in 46 cases. None, it will be noted, showed agglutination in a dilution higher than 1 in 50. It would seem, then, that agglutination to 1 in 50 is no evidence that the individual is suffering from infection by Bacillus F.

Investigation of normal stools for these organisms.—By the courtesy of Dr. D. Moore Alexander, pathologist to the Brownlow Hill Workhouse Hospital, the stools of 100 healthy children, varying in age from a few months to six years, were obtained and investigated by our usual method. In 12 cases pale colonies on MacConkey plates were isolated which did not clot milk, but these when tested against Bacillus F serum (titre: 5000) failed to produce any agglutination. We have therefore been unable to obtain these organisms from the stools of normal children. Confirmation of this absence of (cultural) Bacillus paratyphoid B from normal stools is found in the work of Seiffert,[4] who failed to find it in a series of 600 individuals.

Stability of reaction of Bacillus F.—Revis,[5] working with our original Bacillus F culture, has found that its reactions are not modified by long-continued sojourn in soil.

Conclusions.—1. We have isolated from the fæces, heart blood, and scrapings of abdominal organs of cases of

[3] F. A. Bainbridge: On the Paratyphoid "Food-poisoning" Bacillus, &c., Journal of Pathology and Bacteriology, vol. xiii., 1909, p. 443.

[4] Seiffert: Zeitschrift für Hygiene, Band lxiii., 1909, Heft 2.

[5] C. Revis: Loc. cit.

epidemic diarrhœa two groups of organisms producing diarrhœa in puppies, the one group apparently new, and corresponding exactly with our original strain Bacillus F, and the other identical with Bacillus suipestifer. 2. These groups are distinguishable from each other, from Paratyphoid B, and from Bacillus suipestifer by absorption tests alone. 3. They were not present in the stools of 100 normal children.

THE TECHNIQUE OF A SIMPLIFIED FORM OF THE WASSERMANN REACTION.

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THE results of the use of the Wassermann reaction are so very satisfactory, and so many modifications of the original technique have been introduced, that the publication of a new method can only be justified on the grounds that it is simpler and quicker in application and gives as good results as any of the other processes now in use. The method that I am about to describe fulfils, I believe, these conditions. It is simple, easy, and quick in application, and, so far as I have been able to test the results clinically, is most accurate. I admit fully that before a final estimate of its value can be formed it ought to be compared with the results of the original Wassermann reaction in a large series of cases. This I have not been able to do; but a process that has given accurate results in 95 per cent. at least of cases cannot be very greatly inferior to any other. I do not claim any originality for the idea of the process, which is a modification of that of Tsernugobow, whereas the details of the technique are very similar to those of Flemming. No complement is added, that which is present in the serum being sufficient. The corpuscles used are human, a point of great advantage to workers who have not access to living animals or to the slaughter-house. The only substance used which necessitates the use of animals is the immune body which joins up human complement and human red corpuscles. This is prepared by injecting thoroughly washed human corpuscles into a rabbit. It is not necessary to give more than two or three injections, which should not be at a greater interval than a week, each dose consisting of about 10 cubic centimetres of 50 per cent. emulsion, given intraperitoneally. The serum will probably not be very powerful, but this is not of much importance, since a very small amount is used in the reaction, and the serum from one rabbit will serve for many hundreds of tests. It is prepared for use as follows: The animal is bled to death and the blood collected under aseptic conditions. The serum is then standardised with human corpuscles and fresh human serum so as to determine the minimal hæmolytic dose under the conditions of the experiment. It is then diluted with sterile normal saline solution in the proportion indicated in the standardisation experiments, pipetted off into sterile vaccine bulbs (½–1 cubic centimetres in each), sealed, and heated to 60° C. for half an hour. If there is any doubt as to its sterility the heating should be repeated on two other successive days.

The method of standardisation will be seen from an example. The requisites are: 1. A 20 per cent. emulsion of human red corpuscles in normal saline; it should have been rewashed at least three times. 2. Fresh normal human serum. 3. Normal saline. 4. The serum to be tested, which must have been previously heated to 60° C. for half an hour. The following tubes were prepared:—

(*a*)	Emulsion 1 vol.	+	serum 5 vols.	+ immune serum 1:0	1 vol.
(*b*)	,,		,,	1:3	,,
(*c*)	,,		,,	1:5	,,
(*d*)	,,		,,	1:10	,,
(*e*)	,,		,,	1:20	,,
(*f*)	,,		,,	1:50	,,
(*g*)	,,		,,	1:100	,,

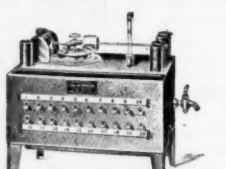
The mixtures of the ingredients were made by means of an ordinary Wright's opsonic pipette with a unit mark about one inch from the end and the serum dilutions prepared in a similar way. The mixtures were placed in a small test-tube about ¼th inch internal diameter, well-stirred with the pipette, and incubated at 37° C. for one hour. (They were thoroughly stirred after half an hour.) The following was the result: with *a*, *b*, *c*, and *d* there was complete hæmolysis; with *e* there was a trace of hæmolysis and much agglutination; with *f* there was agglutination, but no hæmolysis; and with *g* there was partial agglutination. This serum was only diluted 1 in 4 for use, so as to make sure of there being an excess of immune body in the conditions of the experiments. I may say that the 5 volumes of serum contain a large excess of complement.

The blood for the test is collected in the ordinary way from a skin puncture, and about ½ cubic centimetre of blood is ample, even if the test has to be repeated. I may point out, what I find is not known as generally as it should be, that if a large crop of serum is desired it is advantageous (*a*) that the blood shall not be allowed to cool after it is collected, and (*b*) that the clot shall be separated from the sides of the vessel in which it is contained, so as to allow of free retraction. To meet the former indication it is a good plan to put the pipette in the incubator as soon as possible after it has been filled; to meet the latter shake the clot as soon as it has formed towards the curved end of the pipette and back again.

The "antigen" used has been the ordinary alcoholic extract of normal heart, prepared by grinding up a weighed amount of heart muscle with four times the number of cubic centimetres of absolute alcohol that there are grammes of muscle, allowing it to stand 24 hours and repeating the grinding, repeating the maceration for another 24 hours, after which it is heated to 60° C. for one hour. It must be quite clear when used, a little being withdrawn from the top layer by means of a pipette. It is diluted with nine times its volume or more, as determined by experiments, of normal saline for use. Before use and afterwards occasionally it is in the highest degree necessary to test this extract. To be of use it should (*a*) give complete deviation of the complement in a known case of late secondary or early tertiary syphilis, even when 1 volume of fresh normal serum from a healthy person is added; and (*b*) used in the conditions of the test about to be described should cause very little absorption (or destruction?) of complement in a normal blood. This is tested simply as follows: Two tubes are prepared, of which the first contains 1 volume of normal serum, 4 volumes of normal saline, and the second 1 volume of the same serum, and 4 volumes of the diluted extract. These are incubated together for half an hour, and to each is added 1 volume of the immune serum prepared as above, and an excess (5 volumes is usually enough) of 20 per cent. emulsion of washed human corpuscles. The incubation is repeated for one hour, the tubes being stirred once or twice. At the end of that time they are centrifugalised, and a definite quantity of the clear blood-stained fluid pipetted off and examined in a hæmoglobinometer. In a good extract there should be *no* difference between the two, and this is sometimes the case. Usually there is a slight difference which naturally tends to interfere with the accuracy of the reaction. This, of course, is common to all methods. I am not prepared to give exact figures, but if there were a marked difference between the amount of hæmoglobin dissolved in the two tubes the extract should be discarded or tested again at a higher dilution.

The only other ingredients—normal saline and a 20 per cent. emulsion of human corpuscles, well rewashed—do not call for mention.

The only apparatus required consists of (1) a Wright's pipette, rather wide—i.e., about 1 millimetre in internal



Author's incubator.

diameter, with a 1 unit mark about 1 inch from the end and a 4 unit mark; (2) a series of small test-tubes about ¼th inch internal diameter and 2 inches long; and (3) an incubator. Good results can be obtained with an ordinary biological incubator at 37° C., and, indeed, most of my results have been obtained in this way. It is, however, a very great advantage, as will appear subsequently, that the mixtures shall not be cold at the

final stage. To avoid this the stand in which the tubes are held may be placed in a water bath at 37° C., and the last addition made whilst they remain *in situ*. I have recently devised a form of incubator specially for the purpose. It is a modification of Hearson's opsonic incubator, part of the top of which is removable and forms a stand adapted to 24 tubes such as I have described. This can be removed and placed on a table and the tubes filled in the ordinary way. It can then be returned to the incubator for the rest of the process. The final additions—of immune serum and emulsion—can be made with the tubes *in situ* and surrounded by warm water. The emulsion and serum may be warmed in the incubator, so that the test-mixture need never be cooled at all. I think bacteriologists will find this incubator useful for many purposes.

The process is as follows. Prepare a Wright's pipette with a 1 and 4 unit mark. Place in each of the tubes of the front row of the incubator 4 units of normal saline solution; these are to serve as controls in order to make sure that the serum to be tested contains sufficient free complement and that the hæmolytic system is in working order. In each of the tubes of the back row 4 units of the diluted extract are placed and the pipette carefully washed out.

One unit of the first specimen of serum is now added to each of the first two pairs of tubes, that containing the normal saline solution receiving its addition first, then that containing the extract; this is to avoid carrying over a little extract into the control. In each case the fluids are thoroughly mixed by repeatedly sucking them into the pipette and expelling them, and in each case it is advisable to see that the mixture forms a continuous column. The pipette is then rinsed out with normal saline solution, and the process repeated with as many sera as are to be tested.

Then the hæmolytic system is prepared thus. Take 1 unit of red corpuscles which have been centrifugalised three or four times, and mix them with four times their volume of the prepared rabbits' serum. This will be more than enough to saturate them with amboceptor and also with agglutinin. Put them in the incubator so as to hasten the combination of the corpuscles and the antibodies.

The final stage of the test consists in the addition of these sensitised and agglutinated corpuscles to the tubes containing the diluted serum. A point which I particularly wish to emphasise is that it is not necessary to wait for an hour before this addition is made. Numerous tests have shown me that the combination in the extract tube is complete in five minutes after it has reached 38° C., and almost complete in two and a half minutes. Of course, if the tubes are incubated in air these times are greater, since the tubes and their contents take an appreciable length of time to get heated up to this temperature; but when the two substances are placed in a narrow tube surrounded with warm water the combination takes place, as I have stated, in five minutes. This is one of the advantages of the incubator made by Messrs. Hearson for me. When a series of half-a-dozen sera have to be tested the first is ready for the sensitised corpuscles as soon as the last mixture has been prepared.

The sensitised corpuscles are strongly agglutinated and form a mass at the bottom of the tube. They are thoroughly stirred up by alternately sucking them into the pipette and expelling them into the tube (still surrounded by warm water in the incubator), and then one unit of the mixture is added rapidly (so that agglutination does not have time to take place again) to each tube of diluted serum. In making these additions, I am in the habit of making the first of each pair to the tube containing serum and extract, then to that containing serum and saline; by so doing I avoid carrying over a trace of complement to the second tube. In each case the corpuscles are very thoroughly mixed in.

The great practical advantage of the method is now apparent. The hæmolysis of the first tube—that containing no extract—is almost instantaneous; warm fluid containing complement has added to it warm corpuscles fully sensitised. On the other hand, the clearing of the second tube (in the case of a positive reaction) is very rapid; the corpuscles are saturated with agglutinin, and being kept warm clump with great rapidity. If the clumping takes place too quickly it may be advisable to give it a second stir before taking the final reading, though, as a matter of fact, I have rarely seen this convert a negative into a positive test.

The great advantages that I wish to claim for this method are its simplicity and rapidity. The latter is most striking. Given that the preparations have been made, the corpuscles washed, and the extract diluted, a serum can be tested within 10 or 15 minutes. As compared with Flemming's method (the modification most used in this country), it has the additional advantage of being (as far as I have seen from an examination of over 200 sera) universally applicable. I have not yet encountered a specimen of serum which did not give abundant hæmolysis when tested in the manner described without the addition of extract within 48 hours of its being collected.[1] As far as my experience goes, this is frequently the case with Flemming's method, more frequently than some experimenters find. Thus in seven specimens of serum three gave no trace of hæmolysis with sheep's corpuscles, but all gave a perfect reaction when tested by my method. Where Flemming's method is applicable it seems to give identical results, though less obvious, the amount of hæmolysis being less. I am aware that Flemming's method can be made applicable in all cases by the addition of known hæmolytic serum, but this introduces a complication which at the present time has been unnecessary with my own. Another convenience is, of course, the fact that normal human corpuscles are employed.

An advantage over the classical Wassermann reaction is the fact that the serum is not heated. This is not only a convenient simplification of the method, but is of theoretical advantage.

The only objection to the method is the variation in the amount of complement present in the serum of different persons and of the same person from hour to hour. This is most marked, and, of course, it prevents any quantitative work from being done by the method except by a somewhat laborious process involving the use of a considerable amount of serum. As against this we must set the convenience and rapidity of the test, regarded as a qualitative rather than as a quantitative one, and the good results that it has given in actual practice.

It has now been used in over 200 cases, and the results have been uniformly excellent. In my first 100 cases, in which the diagnosis was known or supposed to be known accurately to the medical man under whose care the patient was, 40 were patients in whom there was no suspicion of syphilis, and all were negative. They included cases of abscesses, boils, abscess of the lung, phthisis, surgical tubercle, malignant disease (both carcinoma and sarcoma), gonorrhœa (both acute and chronic), soft sore, lupus, pernicious anæmia, diabetes, jaundice, typhoid fever, &c. Of the 60 known cases of syphilis, five were primary; three gave the reaction, one of them in a man who averred that the chancre had only appeared four days previously. This, of course, is much earlier than the reaction usually occurs, and I think there must have been an error on the part of the patient. Ten only were examined in the secondary stage; all without exception were positive. Thirteen were congenital cases and all were positive; in three of these cases the apparently healthy mother was tested and found to give the reaction. Two cases of tabes and four of general paralysis were examined; all positive (this refers to the blood, not to the cerebro-spinal fluid, in which I have had but little experience). The remaining 23 patients had various forms of tertiary lesions (mostly gummata, ulcers of the skin, and joint lesions) or were old cases with a perfectly clear history of syphilis, but without active disease at the time of the examination. Twenty-one (all except two) gave positive reactions. Of the two remaining, one was a patient with a history of syphilis 36 years ago, but with no active symptoms for many years. The last patient was the only one in which a real failure had to be recorded. The physician in charge of the case arrived at the diagnosis by a process of exclusion, but was quite convinced of its accuracy.[2] The patient showed no signs of improvement after a month's antisyphilitic treatment, and denied all history of the disease in a most emphatic manner, and gave no reaction. Thus of 60 cases of syphilis, two early primary cases, one case of 36 years' duration, and one which must be called at the least doubtful, gave no reaction. I may say that in most of the cases recorded I did not know the diagnosis until the examination

[1] Since writing this I have found one specimen (from a case of spleno-medullary leucocythæmia), which caused but very slight hæmolysis on the only occasion on which it was tested.

[2] He has since come to the conclusion, on clinical grounds alone, that the case is not syphilitic in nature. The serum diagnosis is therefore probably correct.

was made. These results are, I think, sufficiently striking to prove the practical value of the method.

PS.—Since writing the above an experience of more than another 100 cases has convinced me that the method yields results which are decidedly better than those claimed for the standard Wassermann test. Regarding every case as a failure in which the result does not accord with the clinical diagnosis, I still obtain more than 95 per cent. of successes, as compared with the 85 per cent. usually quoted. I have examined 12 cases of tabes; all reacted, showing 100 per cent. of correct results in place of the 50 per cent. in which the reaction is supposed to be present when tested by Wassermann's method.

A CASE OF CEREBELLAR HÆMORRHAGE

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THE patient, a boy, aged 10 years, was admitted to the General Hospital, Birmingham, on June 3rd, 1910. The following history was obtained from the schoolmaster and the patient's father. The boy was first taken ill on May 28th, 1910. He complained of severe colicky pains in the abdomen and was sent to bed. Next day he was worse and complained of severe frontal headache; he also vomited several times. Two days later he screamed at intervals of about half an hour in addition to his other symptoms. He was quite conscious. During 24 hours previous to admission he commenced to get "drowsy," although on the morning he was removed to hospital he was able to answer questions. The child belonged to a large family of healthy children. The mother was very neurotic; the father was quite healthy. Six years ago the patient was knocked down by a motor-car and one wheel of the car passed over his head, and he was said to have sustained a fracture of the base of the skull. His mental condition had always been poor. He had had no other illness. There was no history of phthisis in the family and no history of recent injury could be obtained.

On admission the patient lay in bed on his right side; head retraction was well marked, the arms were folded on the chest, and the knees were drawn up so as to nearly touch the abdomen. The abdomen was markedly scaphoid. He resented any interference and cried out when touched; if moved into any fresh position he soon resumed his old attitude. The patient was quite unable to answer any question put to him. Both eyes were wide open and both pupils were widely dilated; there was no squint noticeable. Both cheeks had a pronounced malar flush. The patient's breath was very fœtid and the tongue was coated with a thick brown fur over the dorsum. His temperature was 98·5° F. The pulse was 84 per minute, of full volume, low tension, and regular.

On examination the patient had well-marked head retraction. Examination of the cervical spine distressed him. Muscular power on both sides of the body was apparently equal. There was no paralysis or paresis of either the upper or the lower extremities. The body was fairly well nourished. Sensation appeared to be unaffected. On examining the eyes the pupils reacted sluggishly to light; no nystagmoid movements were observable. It was impossible to make a proper examination of the optic discs as the patient resented a strong light being thrown into his eyes; from a fleeting glance the discs appeared normal and the veins were congested. No lesion of the cranial nerves could be detected. Urine was passed involuntarily. The bowels had not been opened since admission On examination of the patient's reflexes, both plantar reflexes were flexor. There was no ankle clonus on either side. Both knee-jerks were absent. Kernig's sign was well marked. The abdominal reflexes were unobtainable. The supinator triceps and the jaw jerks could not be obtained. Nothing abnormal could be detected on examination of the chest or abdomen. Examination of a catheter specimen of urine revealed no pathological condition. Seen the same evening at 8.30 the patient was apparently sleeping; both eyelids were semi-closed, and he lay in the same attitude as on admission. From time to time he gave vent to loud cries. Seen again the following morning, the patient's condition was unaltered. Lumbar puncture was performed at 11.30; the needle was introduced between the first and second lumbar vertebræ with considerable difficulty, as the patient writhed about in the bed. The fluid was found to be under considerable pressure and squirted from the orifice of the needle. The fluid was quite clear; a little over 10 cubic centimetres were withdrawn. Nothing pathological in its constitution was found on examination. At 2.30 P.M. the same day the patient suddenly stopped breathing. All efforts to restore respiration were unavailing. The pulse was present at the wrist for three-quarters of an hour after the cessation of respiration; it improved for a time while artificial respiration was being performed, but at the end of three-quarters of an hour the heart ceased to beat.

Necropsy.—The result of the post-mortem examination was as follows. The body was well nourished. Rigor mortis was present in the upper and lower extremities. His height was 4 feet 1½ inches, his weight was 3 stones 4½ pounds, and his chest measurement was 23 inches. With regard to the respiratory system, the epiglottis was normal, the trachea and bronchi were injected and contained frothy mucus, and the pleuræ was normal except for some slight adhesions to the diaphragm on the right side. As to the lungs, the weight of the right was 7 ounces and of the left 9 ounces; they showed marked emphysema, which was most noticeable just below the pleuræ, and they were congested and slightly œdematous. There were no signs of pneumonia. The lymphatic glands at the roots of the lungs were not enlarged. With regard to the circulatory system, the capacity of the pericardium was 177 cubic centimetres. The heart weighed 4¾ ounces. The pericardium contained a small amount of free fluid; there was no pericarditis. The mitral and tricuspid valves of the heart were normal. Each of the pulmonary and aortic valves had only two cusps, one large one, and one about the normal size. The appearance was as if the two anterior pulmonary cusps had fused to form one large one, and as if the two posterior aortic cusps had done likewise. Both coronary arteries were normal, so also were the large blood-vessels. The cavities were not enlarged. The heart muscle was normal in colour and in consistence. The œsophagus was normal. The stomach and small intestines were all healthy. Small post-mortem intussusception was found in the jejunum. The mucous membrane of the large intestine was injected and showed well-marked post-mortem staining. The liver weighed 28 ounces; it was very congested, dark purple in colour, very firm, and not easily friable. The gall-bladder and bile-ducts were normal. The pancreas was normal. The kidneys were both very firm, the left being the larger; the right weighed 2½ ounces and the left 3 ounces; the capsules stripped readily. Fœtal lobulation was well marked. There was marked congestion of both organs. The cortex and medulla were normal in thickness. There was no nephritis. The ureters and bladder were normal. As to the ductless glands, the thyroid was normal. The spleen weighed 3½ ounces, was firm, and dark red in colour; the capsule was thick and tough. The suprarenals were normal. Microscopical sections of the various organs revealed no pathological change. With regard to the central nervous system, the brain weighed 43 ounces. The cerebral membranes did not show any meningitis. The brain showed some œdema of the cerebral hemispheres and internal hydrocephalus. Behind and external to the lateral ventricle, in the left side of the cerebrum, was a small cystic area of about the size of a pea showing the remains of an old hæmorrhage. In the right lateral lobe of the cerebellum there was a large hæmorrhage of about the size of a golf ball, the blood clot being black and shiny with two whitish firmer areas. The substance of the cerebellum round the clot was darker than normal. The hæmorrhage had almost reached the surface posteriorly. The blood-vessels of the brain were quite healthy. Microscopical examination did not show any pathological condition. No trace could be found of the injury received to the cranial bones by his accident six years ago.

The above case was of peculiar interest from the fact that it showed many of the typical signs of a basal meningitis which indeed was the provisional diagnosis. I am indebted to Sir Robert M. Simon for permision to publish the case.

Birmingham.

Reviews and Notices of Books.

The Diseases of Infants and Children. By EDMUND CAUTLEY, M.D. Cantab., F.R.C.P. Lond., Senior Physician to the Belgrave Hospital for Children, &c. London: Shaw and Sons. 1910. Pp. 1042.

WE have several excellent clinical works on the diseases of children written by English authors, but they lack, in every case we can recall, that precision which is demanded by students who have had a thorough grounding in the preliminary scientific subjects and in modern laboratory methods. The scientific methods of hæmatology, bacteriology, and chemistry play such important parts in the diagnosis and treatment of disease that, no matter how good a book may be from the point of view of clinical picture-drawing, unless it supplies full details of the latest scientific and laboratory methods required in the practice of these subsidiary branches of medicine, it cannot expect extensive patronage. The days of the leisurely text-book are over; the modern student, and, indeed, the more progressive of the younger practitioners, require their medical facts, unfortunately, in predigested form. It is only in a spirit of genuine appreciation that we express the view that Dr. Cautley's book fulfils this requirement with remarkable completeness. To attain his ends both style and individuality have been in part sacrificed, but in spite of these concessions the book does not make tedious reading, nor does it lack in character. Dr. Cautley is not fond of pronouncing judgment, although he is a most ruthless critic; hence it is not surprising to find that on many of the vexed and controversial subjects of the day in the domain of pediatrics he has subjected the evidence afforded by both sides to severely destructive criticism, without expressing any definite views of his own. In the chapter on Tuberculosis, and especially in that part of it in which the mode of infection is discussed, this attitude of mind can be clearly traced. Again, in the chapter on Chorea there is something masterly in the non-committal character of the following summary of the pathology: "At present it is advisable to regard the disease as a functional disorder, due in some cases to imperfect nutrition, and in others to microbial infection, which may or may not be the same as that of acute rheumatism." This summary would be difficult to controvert in any one of its aspects. On the other hand, it would be easier to criticise an earlier statement, which is to the following effect: "That the poison in a microbe rather than a toxin is suggested by the frequent unilateral character of the disease." Surely the systematic distribution of the manifestation of chorea is one of the strongest arguments against this view of the pathology?

The general arrangement of the subject-matter of this decidedly ambitious work is excellent; it is divided into 73 chapters, each one of which is complete in itself. Groups of chapters, numbering anything from four to six, make up independent sections which comprise large subjects, such as the disorders of metabolism, the alimentary system, the special sense organs, and the hæmopoietic system. Each chapter, though unembarrassed with a multiplicity of quotations or references, represents a short and concise abstract of the recent literature on the subject. Although the author only claims that his work fulfils the requirements of practitioners, we have ourselves found that it is a reliable work of reference for special subjects and rare conditions. We have compared it with several systematic works on the same subject which include many volumes, and we have found it in almost every instance more helpful than the larger works. For instance, we could find in none of them a better account of chloroma, chondrodystrophy fœtalis, cleido-cranial dysostosis, and ateleiosis. It is not, however, only on recondite and rare conditions that Dr. Cautley writes to the point; on such commonplace subjects as infant feeding, infant management, and the common ailments incidental to childhood he is equally lucid and practical always. We have little hesitation in saying that for its size this is the best English text-book on the subject of the diseases of children with which we are acquainted.

A Handbook of Medical Diagnosis. For the use of Practitioners and Students. By J. C. WILSON, A.M., M.D., Professor of the Practice of Medicine and Clinical Medicine in the Jefferson Medical College and Physician to its Hospital; Physician to the Pennsylvania Hospital; Physician in Chief to the German Hospital, Philadelphia. With 408 text-illustrations and 14 full-page plates. London and Philadelphia: J. B. Lippincott Company. 1909. Pp. 1435. Price 25*s.* net.

THIS book is of more ambitious character than the majority of works upon the subject of medical diagnosis, since it not only deals with the methods of diagnosis, but also with the etiology and symptomatology of diseases; in other words, it is practically a combination of a work on diagnosis with one on medicine, save that considerations of treatment are not included, and pathology is only incidentally referred to. It is not surprising, therefore, that it extends to 1435 pages. It is obviously the outcome of a large experience both of practical diagnosis and of teaching, and is therefore calculated to be of value, especially as a work of reference.

It is divided into four parts, the first of which treats of medical diagnosis in general, and is concerned with general principles, with a review of the topography of the body, and with the methods of case-taking and case-recording. The second part gives detailed descriptions of the methods of diagnosis and of their immediate results. It comprises the various procedures usually classed under the head of clinical methods. The ordinary routine of physical diagnosis is discussed fully and the explanations and significance of physical signs are admirably set forth. The sections dealing with percussion and auscultation may be mentioned as worthy of special note. They are thoroughly lucid and abound in practical hints and cautions. The examination of the blood, urine, and sputum is described in sufficient detail to enable satisfactory reports to be worked out, and the methods recommended are given with such instructions as to enable them to be applied practically. The examination of the nervous system is dealt with at some length, and the manner of investigating and interpreting the various symptoms and signs is clearly worked out. The investigation of the eye is also described in detail, and some very good coloured plates illustrating the varieties of the appearance of the normal fundus and the morbid appearances in disease are given. The applications of the X rays to diagnosis are discussed in a special chapter.

The third section is devoted to a consideration of symptoms and signs, more especially in regard to their topographical distribution and their significance in diagnosis. This constitutes a somewhat original feature in a work of this kind, and one which should be of considerable value to the student. Questions of temperament and diathesis are also included, and an interesting account of the characteristic facies of certain diseases is given. Posture, attitude, and gait are all discussed and their indications are clearly pourtrayed. The symptoms and signs occurring in diseases of the various systems of the body are then categorically considered—e.g., in connexion with the nervous system the following symptoms and signs are described at length and their diagnostic significance indicated: pain, tenderness,

paræsthesia, vertigo, convulsions, tremor, fibrillary twitchings, emotional states, and derangements of consciousness, including delirium, stupor, coma, catalepsy, and insomnia.

The fourth section deals with the clinical applications of diagnostic methods, and comprises descriptions of the various diseases under the following headings: Definition, Etiology, Symptoms, and Diagnosis. The actual diagnosis is divided into direct and differential. Under the former is given a summary of any pathognomonic or characteristic features, while in connexion with differential diagnosis the various conditions simulating the disease are briefly dealt with and the points of distinction are clearly brought out. It will be seen that this section comprises more than is usually included in works on diagnosis, but it certainly has the merit of bringing together all the information necessary to arrive at a diagnosis and thus to facilitate the use of this book as a work of reference. The accounts given of the individual diseases are by no means mere compendia of symptoms, but are clearly written and afford sufficient descriptions of the diseases dealt with. In some cases brief pictures of the essential pathology are included, and where any special methods of diagnosis, chemical or bacteriological, are available these are thoroughly discussed. Considerations of space prevent a detailed analysis of this part, but some of the descriptions given are of a high order of merit, notably the specific infections, diseases due to parasites, and aneurysms. A useful index is given, and the table of contents is a very full one.

The book is written in a style easy to read, it is well printed, and the numerous plates and illustrations are uniformly good. The author's object, according to the preface, was to bring clinical phenomena and their associations in disease into correlation in such a way as to facilitate reference to special methods in obscure cases and to afford a comprehensive text-book for the student. He has carried out his objects in a satisfactory manner, and we can commend his book as a valuable work of reference.

Vetera et Nova: or Extracts from the Diary of a Medical Practitioner. Studies and Essays by THOMAS LOGAN, M.D. Aberd., L.R.F.P.S Glasg. Edited by QUINTIN MCLENNAN, M.B., Ch.M. Glasg., and P. HENDERSON AITKEN, M.A., B.Sc., D.Litt. In three volumes: Vol. I., Biological Physics, pp. 576; Vol. II., Physic, pp. 284; Vol. III., Metaphysics, pp. 110. London: H. K. Lewis. 1910. Price 24*s.* net.

THE late Dr. Thomas Logan was a cultured and widely read man, who was busily engaged during a long professional life as a general practitioner and public health officer, but found time to take an interest in the scientific problems of medicine and to offer speculative suggestions in connexion with them. The three volumes before us represent the various speculations he evolved and the views he entertained in regard to these matters. Originally not intended for publication, he appears to have later worked them up for the press. He died before he was able to fulfil his intention, but the work has been carried out in strict accordance with his wishes by his trustees and the editors.

The first volume is devoted to biological physics, and in it Dr. Logan develops views which are, to say the least, heterodox. He starts with a generalisation, *circulatio circulationum omnia circulatio*, and endeavours to establish the existence of numerous circulatory processes and cycles within the living organism other than that great system to which this term is usually applied. It was especially in regard to the nervous system that Dr. Logan developed his conception. He described a neural lymph as well as a hæmal lymph, and believed that the nerve cell or neuron does not receive its nutritive material directly from the blood circulation but from the matrix of the neuroglia, and in one sentence, which we find it difficult to follow, he claims that "its (i.e., the neuron's) dendritically imbibed protoplasm is excreted along its axonal process or processes into the sensory and motor terminal arborisations respectively in the form of organisable material which is utilised by the skin and muscle structures respectively as nutritive plasma in turn." The cerebro-spinal fluid secreted by the pia mater and choroid plexuses is described as being distributed along the spaces and interspaces of the entire nervous system and as finally exuding from special exits, or from the free surfaces of the skin, mucous and serous membranes, and into the sarcolemmal sheaths of the muscle fibres and thence into the systemic lymphatic circulation. This cerebro-spinal lymph circulation, the gastro-intestinal, and the blood circulation make up the three principal circulations. These views are developed at some length and are applied to the explanation of many of the ordinary phenomena of living organisms and to physiological processes, but they are expressed in involved language and with great repetition. In the second volume these views are applied to pathological considerations, and many diseases are attributed to disturbances of this hypothecated neural circulation. The third volume deals with metaphysical considerations and is outside our own province.

From the very brief summary we have given of Dr. Logan's views it will be readily seen that they are rather speculative and transcendental than founded upon observation and experiment. This work must be regarded mainly as a monument to the author's industry and imagination, but there are suggestive places where Dr. Logan's surmises may later be found to accord with ascertained fact.

LIBRARY TABLE.

Applied Religion. By W. WINSLOW HALL, M D. Edin. Second edition. London: Headley Brothers. Letchworth, Herts: The Alpha Union. 1910. Pp. 94. Price 1*s.* net.—Under the four headings—personal, social, national, and international—Dr. Winslow Hall endeavours to show how religion may be applied to the affairs of everyday life, believing that religion and the humdrum everyday life are one and indivisible. This is the essence of that all-important change in outlook which marks the beginning of existence on a spiritual plane, an existence wherein lies the only immortality, an ecstacy which comes of the conviction of God's existence and the cultivation of a loving personal relation to Him. No one can read Dr. Winslow Hall's book without feeling that he describes a real experience when he writes of the "rapture wherein the soul ceases to be its petty separate self, and feels, with a flash, its absolute oneness with all other souls and God." The quest for the beatific vision is not the "higher selfishness"—the "mean wish to dodge one's own dastard soul into heaven, no matter who may burn in hell"—but the attainment, by absolute and gladsome giving, to oneness with God. There is a hymn and a sonnet in each chapter, and these sometimes reach a high standard of beauty, reflecting the lofty thoughts, the hope and inspiration of the writer. The book is a reflection of the pure simplicity of an earnest and practical man not sectarian in thought or practice, but imbued with a sense of the reality of religion and the impossibility of life apart from its practice. It is good to know that such men live and work amongst us.

Die Syphilisbehandlung mit dem Ehrlich-Hata'schen Mittel (Dioxydiamidoarsenobenzol). (The Treatment of Syphilis by the Ehrlich-Hata Remedy.) Von Dr. JOHANNES BRESLER. Halle a/S: Carl Marhold Verlagsbuchhandlung. 1910. Pp. 30. Price 1 mark.—We refer elsewhere to some of the reports of the results of the new remedy for syphilis which was introduced by Ehrlich in September of last year. The first report was published in March of this year, and

now the number of papers on the subject is rapidly increasing. This little pamphlet contains, in a convenient form, nearly all that has appeared in print up to the present on the subject. It gives full particulars as to the mode and technique of the injections. Those who wish to know about the new preparation and its method of use will find in this treatise what they require.

First Principles in the Art of Physical Development. By W. A. CHAPPLE, M.P., M.D., Ch.B. New Zealand, M.R.C.S. Eng., D.P.H. London: Cassell and Co. 1910. Pp. 87. Price 1*s.*—Strong and powerful muscles do not presuppose either health or human efficiency. The healthy development of the vital organs is of as much importance as the development of the muscular system, and the aim of our author is to focus attention on that training and development of the vital organs which makes for efficiency in the human economy and resistance to disease. He regards the ideal in development to be the production of well-balanced organs rather than over-developed muscles, and places swimming first among the exercises which tend to this end. The issue of a small book by a medical man enunciating such common-sense and important principles should do much to check the extravagant ideas in regard to physical development which are abroad to-day.

How to Cut the Drug Bill. By A. HERBERT HART, M.D., M.S. Durh., M.R.C.S. Eng., &c. Second edition. London: John Bale, Sons, and Danielsson. 1910. Pp. 57. Price 2*s.* 6*d.* net.—The object of this book is threefold: to enable medical men to reduce the drug bill by from 20 to 50 per cent., to create a greater enthusiasm for pharmacy, and to preserve to the profession useful medical prescriptions. Reduction of cost is effected by the substitution of method for disorder, by the provision of ready tables whereby strong acids and concentrated extracts are purchased and diluted to pharmacopœial strength, and liquors and infusions made up in the surgery from the crude drug. All the directions given are simple and clear, and there is a useful list of abbreviations.

Four Common Surgical Operations in India. By Major P. C. GABBETT, I.M.S. London: Luzac and Co. 1910. Pp. 57. Price 2*s.*—The conditions of surgical practice in India differ so considerably from those met with in European towns as almost to justify the application of the term tropical surgery. Some operations, such as those for elephantiasis of the scrotum and abscess of the liver, are almost peculiar to tropical surgery, and some, although often performed in Europe, are so much more frequently done in India as to make them characteristically Indian. Major Gabbett has given the details of the performance of the three common operations—that for the radical cure of hernia, for the cure of hydrocele, and the removal of the scrotum in elephantiasis—as these are carried out in the Madras General Hospital. Major R. H. Elliot, I.M.S., has added a chapter on the method of cataract extraction practised in South India, which differs in some material particulars from that in vogue in Europe. The book will be of help to surgeons of the Indian Medial Service who are likely to be called upon to take up surgical work in the districts of India where these maladies are common.

The Green Book of London Society. Edited by DOUGLAS SLADEN and W. WIGMORE. London: J. Whitaker and Sons, Limited. 1910. Pp. 487. Price 5*s.* net.—This reference book is issued from the office of "Whitaker's Almanack," and to say that alone is an impressive recommendation. It describes itself as "Being a Directory of the Court, of Society and of the Political and Official World; including Celebrities in Art, Literature, Science and Sport, with many other Subjects of Current Interest." The chief part is the "Directory of British Titles," which occupies 218 pages and is a complete list of every person bearing a British title, with the address, official position, and explanation of who the bearer of the title is. It includes all the colonial politicians who are "Honourables" for life. It is a careful, concise, and clear compilation. The next largest section is the "Directory of Peers, Peeresses, and Principal Official Personages," which occupies 111 pages. Some pages are devoted to the Court and to politics, and then we come to the celebrities who are public speakers, to preachers, to the most distinguished persons in science, literature, art, music and the drama, and to the best performers and chief supporters of the various kinds of sport. The whole work shows evidences of originality, enterprise, and industry.

The Law of the Bolo. By STANLEY PORTAL HYATT. London: T. Werner Laurie. 1910. Pp. 271. Price 6*s.*—Mr. Hyatt, in a foreword, tells what is the Law of the Bolo, of the terrible two-foot-long knife of the Filipino, the law which has the crowning merit of simplicity and the force of antiquity, the law which says that the spoil shall go to the man with the longest reach. The story is of Felizardo, the ladrone leader, who, for the love of a woman, kills a priest and takes to the hills and to outlawry. In the course of his pursuit by the Philippines Constabulary under Captain Basil Hayle, the daughter of the outlaw falls into the Captain's hands and he returns her to Felizardo, who requites the service by settling a private affair of the Captain's according to the Law of the Bolo. The characters are well drawn and the situations real in a story which will maintain the author's reputation for terse and vivid writing.

JOURNALS AND MAGAZINES.

Journal of Pathology and Bacteriology (Official Organ of the Pathological Society of Great Britain and Ireland). Vol. XIV., No. 4, containing 18 plates, 2 of them coloured. Published from the Department of Pathology, Cambridge University. Pp. 209. Price 15*s.* net.—This number contains a series of very interesting articles, and calls for more detailed comment from us than is usual. The first of these articles, by C. Bolton, is A Study of the Mode of Action of Gastrotoxin and the Healing of Gastrotoxic Ulcers. It is pointed out that gastrotoxin (serum of rabbits immunised against gastric cells of guinea-pig or of another rabbit), hepatotoxin, enterotoxin, and hæmolysin, on injection into guinea-pigs, devitalise the cells of the gastric mucosa and allow it to be digested. The necrosis and ulceration produced in this way does not occur if the digestive ferments are put out of action by neutralising the contents of the stomach with sodium carbonate. Hyperacidity (hydrochloric above 0·7 per cent., sulphuric 0·9 per cent., acetic 2·5 per cent., and lactic 6 per cent.) produces necrosis, and a degree of acidity which, by itself innocuous, much increases the effect of gastrotoxin. The acid acts as a protoplasmic poison, and similar results are given by sodium taurocholate and formaldehyde. Localised ulcers are best produced by the local injection of gastrotoxin into the stomach wall. Normally they are healed in three weeks; a moderate degree of hyperacidity or hypoacidity does not delay healing. J. M. Beattie describes Further Experiments with a Streptococcus Isolated from Cases of Acute Rheumatism. Two strains of streptococci were used, and one of these had lived on artificial media for five years. In thirteen experiments both strains uniformly produced arthritis in rabbits, and occasionally endocarditis, on intravenous or intraperitoneal injection. The disease produced is a chronic relapsing arthritis which moves about suddenly from joint to joint; severe attacks may be produced by exposure to cold. The joints show no gross anatomical change; cultures from the heart blood and the fluid in the joints are sterile, but the streptococcus may be recovered from the synovial membrane of one or more joints. W. K. Hunter, in the Histological Appearances of the

Nervous System in a Case of Acute Chorea, found that the ganglion cells of the cord and in some cases the nuclei were normal, but nearly all the large cells of the motor cortex showed loss of tigroid substance, the result of over-activity. With Donaggio's method, from 5 to 10 per cent. of the nerve fibres in the brain and spinal cord showed early primary degeneration. He does not regard the changes as specific.

C. Powell White contributes two articles, one on Experiments on Cell Proliferation and Metaplasia, in which he points out that oleic acid, palmitic acid, or turpentine give rise to aseptic abscesses when injected subcutaneously; olive oil, liquid paraffin, and equimolecular mixtures of oleic or palmitic acid with cholesterin give negative results. If epithelium (epidermic, hair follicles, sebaceous glands) come into contact with the abscess it grows round the walls and forms a lining of stratified squamous epithelium, the whole resembling a dermoid cyst. The proliferating epithelium may infiltrate the surrounding tissues to some extent and form emboli in the neighbouring lymphatics, but there is no evidence that the abscess exerts any characteristic influence on the epithelium. The second article is on a Case of Carcinoma Myxomatodes of the Testis occurring in Infancy. This was a tumour of the testis in a child 15 months old. It was composed of epithelial tubules embedded in a loose fibrous stroma. The epithelium contained mucous globules, which were excreted both into the lumen of the tubules and into the underlying connective tissue. This tumour originated in the intratesticular ducts and infiltrated the rest of the organ. C. M. Stevenson, in a paper on the Resistance of the Arteria Wall, gives the results of his experiments when water at different known pressures is circulated through pieces of brachial and carotid arteries, removed after death, and the pressure is measured which must be applied to the outside of the artery to partly, or wholly, obliterate the lumen. In these cases contraction is excited by adrenalin, chloroform, or barium salts; the arteries are also examined, after being kept in salt solution for 24 hours, when they are fully relaxed. The details of 37 cases are given, the results varying widely in individual cases and being more influenced by the degree of contraction than by the amount of sclerosis. The excess of external pressure over internal pressure (resistance of the arterial wall) which is required to close a contracted brachial artery is on the average about 21 mm. Hg; for a relaxed artery about 14 mm. The resistance is, however, a function of the internal pressure, and increases as the internal pressure increases. Thus, if P is the external pressure required to close an artery, the pressure of liquid inside the artery is $P - (9{\cdot}5 + \frac{P \times 10{\cdot}1}{100})$.

C. H. Browning, J. Cruickshank, and I. McKenzie write on the Constituents concerned in the Wassermann Reaction, with Special Reference to Lecithin and Cholesterin. The authors separate a crude alcoholic extract of fresh ox-liver into a part soluble in cold ethyl-acetate and a part insoluble (= lecithin). These are compared, along with the crude extract, as regards lytic effect, activation of cobra venom, action on serum complement, and action in the Wassermann reaction. They find that a saturated solution of cholesterin in alcoholic lecithin is a very efficient substitute for a crude organ extract in the Wassermann reaction. A. S. M. Macgregor, in a paper on Immunity Phenomena in Cerebro-Spinal Meningitis, Opsonins, and Agglutinins in their Relation to Clinical Features, Prognosis, and Therapy, states that agglutinins are generally absent in very acute fatal cases of cerebro-spinal meningitis, in cases which are chronic from the beginning, and in short acute cases which last two or three days and recover; cases with acute severe outset, abating by crisis about the seventh or eighth day, agglutinate to 1 in 80–100. The opsonic index tends to be less than 1 in the early stages of the acute disease, and tends to be highest during the second and third weeks of illness. The highest indices are found in those cases which show most agglutination. The index is of no prognostic value. Free opsonin is not found in the cerebro-spinal fluid. L. Cobbett contributes an excellent paper on the Portals of Entry of the Tubercle Bacillus which causes Phthisis, in which he examines the probability of setting up primary pulmonary tuberculosis by alimentary infection by means of experiments with carbon particles, B. prodigiosus, and tubercle bacilli on guinea-pigs. He finds that feeding with finely divided carbon does not cause pigmentation of the mesenteric or other lymph glands or of the lungs, and that there is no reason to suppose that anthracosis is produced by particles absorbed from the intestine. Pulmonary tuberculosis in the guinea-pig can be readily produced experimentally by inhalation of, but not by feeding with, tubercle bacilli, and in guinea-pigs fed with tubercle bacilli it does not occur as part of a generalised infection. Bacilli inhaled in fine droplets of water reach the periphery of the lungs in less than five minutes. A. E. Boycott finds—Peritoneal Blood Transfusion—that rabbits' blood injected intraperitoneally into other rabbits is quickly absorbed into the circulation and produces polycythæmia. The excess of red cells is destroyed more quickly than the same quantity injected intravenously, probably because the cells are rendered "more foreign" by being passed through the peritoneum. Phagocytosis of red cells is much more active with intraperitoneal than with intravenous injections; there is no actual hæmolysis in either case. J. Ritchie contributes an article on Meningitis associated with an Influenza-like Bacillus. He describes three cases of fatal meningitis in young children. From the cerebro-spinal fluid cultures of a hæmophilic bacillus were obtained, pathogenic for guinea-pigs and monkeys but not for rabbits or mice, and not differing from the B. influenzæ of Pfeiffer.

Other papers are: G. S. Middleton and A. R. Ferguson, on a Case of Extreme Emphysema Universally Affecting Both Lungs in a Child of Five Years. They find that the "honeycomb" cavities arise in the majority of cases from dilatation of alveoli with rupture of the septa. A few cavities probably arise from distension of bronchioles. T. Shennan and J. Miller describe a Case of Wool-sorters' Disease in which the source of infection could not be traced. Maude E. Abbott and J. Kaufmann describe an Unusual Case of Congenital Cardiac Disease: Defect of the Upper Part of the Interauricular Septum (Persistent Ostium Secundum). D. A. Welsh and J. E. V. Barling—Hæmogregarina Petauri: a Hæmogregarine of a Marsupial Flying Squirrel—find the parasite in the red blood corpuscles of Petaurus sp. (probably B. sciureus). D. A. Welsh, E. J. Dalyell, and M. B. Burfitt describe Hæmogregarina Dasyuri: a Hæmogregarine of the Australian Native Cat. This parasite they found in the red blood corpuscles of Dasyurus viverrinus. D. A. Welsh and E. J. Dalyell, Hæmogregarina Parameles: a Free Hæmogregarine of an Australian Bandicoot (free forms only found in blood of Parameles nasuta). H. Henry, in a preliminary note on the Hæmoprotozoa of British Sea Fish, notes that of 348 fish examined 55 were infected, 11 out of 29 species showing parasites. Nine known species were found. Nine new forms are named (including a spirochæta), but no descriptions or figures are given.

In this number are included index for volume and card index for the part.

The Dublin Journal of Medical Science.—The August issue of this journal contains the pathological report of the Rotunda Hospital for the year 1908–9, written by Dr. Robert J. Rowlette. Dr. St. George Gray writes on dysentery

as seen in West African prisons, in which the condition appears to be due largely to unsuitable food and to yield most readily to treatment with magnesium sulphate, ipecacuanha being useless and opium actually harmful. Dr. Madeleine S. Baker discusses the temperature curve in pulmonary tuberculosis, noting among other things the production of intermittent pyrexia by the tubercle bacillus alone without the presence of pyogenic organisms and also the occurrence of apyrexial cases of progressive disease; while Sir John Moore contributes an article proving once more by statistical evidence the efficacy of vaccination in the prevention of small-pox. "He that hath ears to hear, let him hear."

Jahreskurse f. Ärztliche Fortbildung. (Annual Post-graduate Course in monthly parts.) July number. Munich: Lehmann. Price 16 marks per annum. This number is devoted to the subject of gynæcology and obstetrics, the former by Professor Veit and the latter by Professor Franz. The rôle of the X rays in uterine therapy is discussed at some length, and the evidence in favour of its employment for myomata brought forward and compared with the somewhat similar claims made for Apostoli's treatment when the latter was introduced. In the subject of cancer of the uterus the chief emphasis is laid upon the early diagnosis and the thoroughness of removal. It appears probable to the writer that the abdominal removal of the malignant uterus will be the routine operation of the future, even if it has not become so already. The high mortality of the early operations has now been superseded by much better results. As evidence of this, Wertheim's and Zweifel's recent figures with 160 recoveries in 173 cases are quoted. The subject of so-called endometritis is one of great complexity, and its etiology and treatment are critically considered. A favourable view is taken of the use of serum injections for those cases of uterine hæmorrhage without definite local disease. In the treatment of post-operative peritonitis the injection of sterile camphorated oil (about 50 to 100 cubic centimetres) appears to have given very good results. In the treatment of uterine displacements, especially prolapse and retroversion, the use of the pessary is condemned very strongly, and the correct manner of operative treatment indicated. The section on obstetrics contains an extremely valuable epitome of the results obtained (chiefly by German authors) in the treatment of contracted pelvis. The size of true conjugate in contracted pelves permitting of delivery through the vagina is given as between 9 5 and 6 5 centimetres, and this size allows of ready classification into three degrees, one centimetre dividing each from the next. High forceps, preliminary version, and premature delivery are all condemned because of the high child mortality which they cause (between 25 and 50 per cent.). Symphyseotomy has now been almost entirely replaced by hebosteotomy, the operation in which the body of one pubic bone is divided from within outwards by means of a wire saw. This avoids the urethra which lies in the mid-line and is not likely to lead to non-union. But in considering the results of the operation in 700 cases, the maternal mortality is 5 per cent. and that of the children 4·3 per cent. (as compared with about 2 and 40 respectively in the case of the above alternative measures), so that this operation can claim to save a large number of children but at the expense of a small number of mothers. The operation should not be employed in pelves of less diameter than 7½ centimetres. The various modifications of Cæsarean section (extra-peritoneal and vaginal) and the value of morphia scopolamine anæsthesia are shortly described. The subject of getting patients up within a few days of operation or delivery is considered in both sections of the book and recommended.

New Inventions.

THE NICURA BICYCLE STAND AND LOCK.

THE accompanying illustration shows a very useful and comparatively simple attachment to a bicycle which serves to keep the machine in an upright position when not in use, and at the same time to prevent anyone but the owner from using it. It is thus at the same time a stand and a lock. The ends of the stand fit to the axle of the back wheel, and is kept in position by the nuts at each end at the axle. Its position is strengthened by the use of stays on the horizontal bars. By means of hinges the stand can be brought into a position over the mud-guard and just at the back of the fork immediately under the saddle. It is then parallel, in fact, with the fork, and may be kept there by means of a small spring and clamp attached to the saddle pillar. When the stand is brought down near the ground the bicycle is pushed a few inches backwards, when it mounts the stand in trunnion-like fashion. At the same time a lock on the stand, situated a few inches below the axle of the bicycle, receives a bolt which locks the stand, which can then only be released

again by a key. As soon as the lock is turned by the key the bicycle is pushed forward a little, the back wheel comes to the ground again, and the stand may then be swung round out of the way over the mud-guard and fastened there. With a little experience the Nicura stand is easily fitted to any ordinary bicycle; it costs 6*s.* and does not weigh more than 2 pounds. Amongst the obvious advantages of the stand are: (1) the bicycle can, as soon as it is dismounted, be put into an upright stable position, so that the uncertain recourse to a lamp-post, the kerb, &c., is not required; (2) in that position it is, at the same time, locked, so that the machine cannot easily be stolen; (3) it is equally safe in the bicycle shed; and (4) the raising of the back wheel from the ground enables the parts of the machine (gear-case, speed-gearing, chain, and so forth) to be easily examined and cleaned, the wheel and chain being free to move without any motion of the bicycle itself. The stand is supplied by the "Nicura" Patents Co., of 110, Fenchurch-street, London, E.C.

WE are requested to state that the Universities Mission to Central Africa are in need of the assistance of a medical man in their mission work, one who would go out to Nyassaland for a period of not less than two years, who is in sympathy with the aims and methods of the mission and a communicant member of the Church of England. There are small hospitals or dispensaries at each of the stations in the diocese and several nurses at Nyassa; at Likoma (the central station) the out-patients in 1908 numbered 37,268 and the in-patients 326 The medical man would be required to superintend the hospitals, visit patients, and take the medical care of the staff.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 3, 1910.

"606" in the Treatment of Syphilis.

THE position which mercury has held in the treatment of syphilis almost from the first recognition of the disease in the last decade of the fifteenth century has hardly ever been seriously assailed until within the last few years, when an attempt has been made to put forward arsenic as a rival, and especially have organic compounds of arsenic been advocated as suitable for the treatment of syphilis. Several of these organic arsenical compounds have been introduced and they have been extensively employed. It is surprising in what large doses they can be given, and for a time they were considered to be comparatively harmless, and, in fact, the names given to some of these compounds claimed that they were non-poisonous, but a more extended experience has shown that in a few cases serious results have followed, and the most important of these is optic atrophy. Therefore, although the efficacy of arsenic in the treatment of syphilis cannot be denied, there has been a very definite tendency of late to restrict the employment of these organic arsenical compounds to those comparatively rare cases of syphilis in which mercury cannot be given.

In the last few months, however, the whole position has been altered. A new organic compound of arsenic has been brought forward by EHRLICH which is believed to possess marvellous therapeutic powers in syphilis, and yet to be in the doses employed of perfect innocuousness. Our foreign correspondents have already given some valuable information on the matter. The substance is called from its constitution dioxydiamidoarsenobenzol, but as this name is rather long, even for German use, the substance has been called "606" for short. Several observers have experimented with the drug, and in the present issue of THE LANCET we publish a paper by Dr. JAMES MCINTOSH on its use, another by Mr. J. E. R. MCDONAGH, and we also refer on another page to a pamphlet on the same subject by Dr. JOHANNES BRESLER of Lueben. The article contributed to the *Deutsche Medizinische Wochenschrift* of August 11th by Dr. WECHSELMANN of Berlin, who has employed the substance in the treatment of 503 cases, has, moreover, been read by this time by many of our readers, who are now, therefore, in possession of a good deal of practical knowledge on the whole position. It is remarkable that in addition to its action on the disease the drug exerts a beneficial effect on the general condition, for the body-weight definitely increases after its use. There is a marked feeling of well-being experienced by most of the patients on the very day of injection or on the following day; this fact is noted in several of Mr. MCDONAGH'S cases. The patients feel much stronger and able to accomplish hings which they could not do before. The rapid relief of chronic pain is one of the most striking effects of the drug. Soreness of the throat, which may have lasted for months or years, or pain in the mucous membrane of the mouth, may disappear almost magically the first night after the injection. It may, of course, be said that this relief from pain is the effect of suggestion; but the relief is often so complete in cases where the pain has lasted for several years that it is impossible to ascribe all or even the greater part of the benefit to the action of suggestion. One of Dr. WECHSELMANN'S patients had for five years suffered from swelling of the ulna with severe pain, but after the injection he had a peaceful night, the first for five years. Other cases are recorded by him, Mr. MCDONAGH, and other observers in which a rapid and complete cessation of pain occurred within 24 or 36 hours of the first injection.

The action on the lesions of syphilis is surprising. Primary sores of the mouth become completely healed within a few days, and mucous plaques of the mouth will disappear within 24 to 48 hours. The definite specific action of the drug was shown in a case of a new-born child under Dr. WECHSELMANN who was attacked with a very severe form of bullous syphilide. One ala of the nose and the last joint of a finger were gangrenous, and in addition there was œdema of the face and legs. The use of the drug was followed by a complete recovery of the skin manifestations in a few days, though the child died ten days later from pulmonary complications. In Mr. MCDONAGH'S fifth case the same rapid clearing up of inflammatory conditions was observed. It is clear then that this drug exerts a marvellous influence on many syphilitic conditions, but all lesions produced by syphilis are not equally easily affected. Thus, in one case while a primary sore of the tongue healed completely in two or three days and the enlarged submaxillary glands also diminished rapidly the papular syphilide which was also present showed very little change three weeks later, so that a second injection was required. Dr. WECHSELMANN explains this difference of action by suggesting that in those lesions where an endarteritis has occurred and the vessels have become blocked thereby or by thrombosis the drug cannot be carried into the tissues, because the blood stream is cut off; but if the vessels are still pervious the results are rapid and complete. In a few cases a second injection seems to be required before much benefit is noticeable, and it is early yet to speak definitely with regard to the question of recurrences. It seems clear that the drug has a definite effect on the spirochætes, which rapidly disappear, but it may well be that some of the germs may remain unaffected by the drug and may develop later. It is of interest to note that in most cases WASSERMANN'S reaction becomes negative within a few days of the injection, but later it may again become positive. The drug has an effect, not only on syphilitic manifestation of the skin, mucous membranes, and bones, but also on the disease of the viscera. Syphilis of the brain seems to be amenable to the treatment and some excellent results have been obtained. Those affections which are called parasyphilitic also seem to be affected; in some cases of tabes a rapid improvement in the condition of the pupil was noticed, but only a few cases of tabes have been treated. In one case, under Dr. WECHSELMANN, in which

weakness of the sphincter of the bladder had caused incontinence of urine for eight years, the condition disappeared two days after the injection.

The question naturally arises, "Does the drug ever do any harm?" Dr. WECHSELMANN has seen none, and no authenticated case has reached us. In one case an old paralytic died in a typical fit a few days after the injection, but it is probable this had no connexion with the injection. No case of injury to the optic nerve has occurred, although in some of the cases the optic nerve was not perfectly healthy before the injection. Local paralysis, constipation, vomiting, and rise of temperature have been noted, but the symptoms have been transient. Five of Dr. WECHSELMANN'S patients were women near the end of pregnancy, but in none of them was there any interference with the pregnancy. It would seem then incontestable that dioxydiamidoarsenobenzol has a very definite effect on many forms of syphilis. It appears to have a direct action on the micro-organism and it acts rapidly, but some syphilitic manifestations are much more resistant than others. No absolutely refractory case has yet been met with, and it is far too early to make any very definite statement with regard to recurrence. So far, harmful effects are few, but it must not, at this early stage of the inquiry, be accepted that no ill results can occur. We consider, however, even on the small amount of evidence yet available, that a new weapon of great value has been placed in our hands for the treatment of syphilis: its full power we do not yet know, and only with the passage of time can we be fully assured of its capabilities and its limitations. The papers by Dr. MCINTOSH and Mr. MCDONAGH, which fully explain the dosage and methods of illustration, will, we are sure, be read with much pleasure.

Ventilation and the Mosquito Curtain.

IN countries infested by biting flies that carry disease, like the mosquito, the net curtain becomes a necessity to all persons except the few who are immune. This precaution, taken to ensure safety from fever, involves a sacrifice which, although rarely defined, is none the less real. In hot countries a much more active circulation of air about the human body is necessary than in cold countries, in order to dispose of the surplus animal heat, and, although the night temperature is lower than that of the day, the increase of relative humidity and the absence of wind often render the night period oppressive. The custom of sleeping on mattresses also, which are well-known non-conductors, aggravates the situation, and when to this is added a mosquito net, with all the resistance it offers to the passage of air, it is not surprising if the discomforts of the tropical night are regarded as the chief penalty of residence in hot countries. The mosquito net is very heavy in proportion to the mesh. The thread of the net occupies 39 per cent. of the total area, and in addition to this numerous cotton fibre projecting into the openings offer a considerable friction resistance to the passage of air. 39 per cent. is thus the loss of area in a net that completely covers a bed. If the bed is a camp cot with a calico roof to the curtain the reduction of area due to the roof is 25 per cent. and to the material of the net 39 per cent. on the sides of the curtain. On a double bed the calico roof would represent a loss of one-fifth of the total area, and as currents due to small increases to temperature escape with difficulty in any but a vertical direction it is easy to understand how the sleeper, under the conditions above stated, suffers from accumulation of animal heat. Men who smoke in bed have an opportunity of observing the rate at which the smoke disperses when the curtain is up or down. The movement of the smoke represents exactly the movement of the air about a bed; it makes clear how very slowly the atmosphere is renewed within a curtain, and how greatly ventilation is interfered with.

One of the chief attractions of Indian hill stations is the ability, in the absence of mosquitoes, to sleep without a net; a greater sense of refreshment is felt in the morning, due to the free circulation of air. The resistance of a mosquito net to a light horizontal current of air is nearly 60 per cent.; the use of a net, therefore, is sufficient in hot weather to destroy the comfort of the sleeper. The net is made strong in order to resist the brutal treatment of the laundry, for as soon as holes begin to appear the mosquito gets through. Cotton is plainly not strong enough for the purpose of giving safety from the attack of flies, as it will not resist the washing process. Among the possible fibres that might be used rhea seems to stand out conspicuously for its strength, fineness, and durability. It is already used for many purposes requiring these qualities, for it is made into racing sails for yachts, and thread for lace-making, and is employed in harness work, and as fishing lines. A mosquito net of rhea, having at least three times the strength of cotton, might be of much finer thread, offering less surface to the air, and the meshes, owing to the resemblance of rhea to linen, would not be encumbered with straggling fibres. In places where the sand-fly is common the net ceases to be a protection, and nothing coarser than muslin can be used, whose resistance to circulation must be at least twice that of mosquito net. Muslin is much used by the natives of India, and especially by women when sleeping on balconies or verandahs on account of the privacy it affords. Sometimes the roof is made of net, but in any case the ventilation is greatly impeded. The loss of current due to the curtain may be restored by means of the punkha, but the attendant coolie is a grave nuisance. When, a few years ago, a self-acting portable fan was put on the market in India, it was welcomed by the public and sold in thousands. It consists of a small hot air engine of well-known pattern, geared with, or driving direct, a revolving fan, in shape like the electric fan. The engine is heated by means of a spirit or a kerosene lamp, and the whole packs conveniently in a case for transport. The saving in cost, as compared with the *punkha walla*, not to speak of its trustworthiness and handiness, has gained for it considerable popularity, but a serious fault has been observed by medical men in the arrangement of the machine. All the products of combustion and so much of the heat as is not converted into work are carried into the fan current, so that the air blown by the machine is both raised in temperature

and reduced in purity. This is inevitable under the best conditions, but as the lamp is generally managed by a servant it is very often badly trimmed, and fouling of the air may occur easily if the wick is turned too high, when smoke escapes, or too low, when partially burnt gases, escape. In cases of extreme carelessness or stupidity mosquito nets have been blackened in a single night. In the large cities like Calcutta, Madras, and Bombay electric current is available for all who wish to use it, but elsewhere, except in the palaces of native princes or in large manufactories, punkhas must continue to be driven by other sources of power. The small portable machine has, therefore, a good future before it. At present it offers a very interesting, and by no means easy, problem to the inventor: that of separating all the products of combustion from the air current produced by the fan. It is also possible that the efficiency of the fan itself may be increased by a better design, for in common with the majority of electrically driven fans the propelling angle of the blades has no variation from tip to root. It thus produces currents of varying velocity, that interfere with each other and affect prejudically the efficiency of the machine. Even in the angle at the tip air propellers vary enormously, the range being at the least from 9° or 10°, with the plane of rotation, to 18°.

We have entered into these details at considerable length because it cannot be too often insisted that the chief art of living healthily in the tropics consists in the means of procuring sound rest at night, so as to arise refreshed in the morning. This is accomplished principally by reducing the usual amount of bedding and by ensuring an adequate air current to carry away the surplus animal heat. If the ordinary mattress is used heat will accumulate beneath the sleeper, and a stronger current will be required to keep him cool. He is thus exposed to irregular cooling, which is more than likely to cause a chill. If the bedding is reduced until the body appears to cool at an equal rate below and above a very moderate air current will suffice to produce the desired comfort. To write of tropical heat in such weather as we have experienced this summer may seem uncalled for, but nowadays all the world travels, and many of our readers are asked for advice upon these points.

Surgery and Anæsthetics in Medical Diseases.

THE increasing tendency towards specialisation in the practice of medicine, using this term in its widest sense to include all applications of what has been tritely called the healing art, is a condition which demands careful consideration in the best interests of the public and of the profession alike. The advances made by the application of surgical methods to medical diseases, more especially in those which German writers not inaptly describe as the boundary zone, have led to an invasion by the surgeon of the territory of the physician from all sides. The pioneer in all phases of human activity is particularly prone to be a zealot and a propagandist. A calm and dispassionate analysis of the results and after-results of new forms of treatment and of new adaptations of surgical procedures is therefore a necessity, if these are to be applied intelligently and with judgment. This can but rarely be achieved by one individual, and hence the value of congresses, where men of different zones of practice, and, still more important, men with various points of view, may foregather, express their opinions publicly, and thus afford the general practitioner and the consultant physician and surgeon, upon whom in the majority of cases rests the responsibility of the choice of treatment, an opportunity for estimating the value of their work. We cannot but feel after some of the discussions before the recent annual meeting of the British Medical Association that the time is ripe for a review of the value of the surgical invasion of medicine with the object of securing a more careful selection of the cases to which surgery should be applied so as to afford the best chance of relief with the least risk. The age of therapeutic nihilism which followed the studies of the morbid anatomists of the middle of the last century gave place to an age of polypharmacy with special symptomatic treatments largely as a consequence of the labours of the physiologist, the pharmacologist, and the synthetic chemist. This phase seems to be giving place to a surgical period, when practitioners and public both demand the drastic and dramatic methods of surgery. Surgical technique has now advanced to such a degree that there are but few operations which the mind of man can devise that cannot be successfully carried through by the practised special surgeon. The time has, however, arrived for something more than a consideration of mortality statistics as a criterion of the value of surgical treatment. The percentage mortality of a given operation is for the most part the measure of the technical skill of the operating surgeon, and, to a less degree, of his ability in the selection of cases. It is this second factor which requires further development, and for this purpose we need much more information regarding the after-histories of the patients operated upon, information which the surgeon is not always able to afford owing necessarily to the conditions of his practice. It sometimes happens that the triumphs of surgery in certain fields are less apparent to the patient and the family practitioner, who are concerned with the after-results, than to the surgeon, whose responsibility often ceases when the patient has recovered from the immediate effects of the operation. In the past the surgeon has had to deal with gross and for the most part tangible conditions, and has therefore been but little concerned with those vague but none the less real factors in disease—personality, temperament, and constitution—which loom so large upon the horizon of the family practitioner and the physician. Now that the surgeon is also concerned in matters formerly in the field of what the Germans and the Americans term internal medicine, it is important that he should also extend his point of view to these factors, otherwise the somewhat selected nature of the cases he encounters is liable to give him entirely erroneous conceptions of the symptomatology of medical diseases, and to lead him to appraise them at other than their real value.

An interesting illustration of this position is afforded by the discussion before the Surgical Section of the British Medical Association of the operative treatment of exophthalmic

goitre, so ably opened by Professor THEODORE KOCHER of Berne, of which a report appears in our issue of August 13th (p. 471). Professor KOCHER discussed the pathology of the disease, its symptomatology, and, most important of all from the practical point of view, the principles of selection of cases for operation. He gave statistics of his own operations for this disease, amounting to 619 operations in 469 cases, many of the cases requiring more than one operation; they showed a decreasing mortality from 5 per cent. at first to 1·3 in his latest series of 72 cases. It is tempting to draw the conclusion that this decreased mortality is in the main due to improved selection of cases, the more so when we are told that the only fatal case in the 72 last mentioned was in a young woman with nephritis in whom the operation was only performed at the special request of the patient and her friends, and the case was admittedly one which should not have been operated upon. Mr. H. A. BRUCE of Toronto quoted collected statistics of 1055 cases with a direct operative mortality of 4 per cent., and complete cure in 16 per cent., as many as 85 per cent. being able to resume their ordinary occupations. Dr. HECTOR MACKENZIE stated that under medical treatment 36 per cent. of hospital patients recovered completely, and not more than 20 per cent. ended fatally. He gave some statistics of operation so unfavourable as to suggest that Professor KOCHER'S cases were of a different type from those seen in London. The case for indiscriminate treatment of the condition by surgical methods can hardly be said to be established as a result of the discussion, and we are still in need of more detailed and exact analysis of the after-history as regards symptoms, signs, and duration of life in these patients. It is of some interest to note that many of the deaths from operation in this condition usually occur during, or shortly after, anæsthesia, and that in this disease, which in its manifestations offers the very anatomy and physiology of terror, and in which the patients are obviously over-sensitive to emotional influences, one of the improvements in the technique of anæsthesia recommended should be in the direction of lessening the psychical shock of this procedure after the manner suggested by Professor G. W. CRILE. This consists in giving the patient brief and, in a sense, fictitious inhalations on several days as a preparation, and then on a settled day giving morphia and going on to complete anæsthesia. Professor CRILE contributed a highly suggestive paper to the section. The special interest of his work in connexion with the subject we are now discussing was his statement that fear alone in animals was capable of causing widespread histological changes in the brain cells, especially in those of the cerebellar cortex. These changes, like those induced by other factors—such as trauma, anæmia, and infection—were capable of being demonstrated by the well-known Nissl's method of investigating the minute structure of nerve cells. Fear and these other factors influenced the immediate surgical risks and decreased the margin of safety in operative procedures upon patients with any grave handicap from disease or other conditions. Professor CRILE emphasised the existence of hypersensibility to fear and to trauma in exophthalmic goitre, and claimed that the adoption of the principles he described had totally altered the immediate results of operation. He lessened the influence of the factor of fear by judicious management of the patient after the manner already referred to, and he excluded the factor of surgical trauma by interrupting the physiological connexion between the brain and the field of operation by means of local anæsthesia. His arguments are certainly very ingenious.

These experiments and the recommendations deduced from them serve to illustrate what a number of details may have to be taken into consideration in the applications of surgical methods to grave medical diseases, even apart from the question of the selection of the cases. In this boundary zone, where physician, surgeon, and anæsthetist meet, each can bring special experience in regard to certain matters concerned, but equal coöperation is a necessity if the best results are to be obtained, and if surgical methods are to be prevented from falling into disrepute owing to over-zeal on the part of some of its exponents. The surgeon must be more than an operator, he must be a medical practitioner as well and must look at all sides of the problem. In this connexion we cannot but feel that some surgeons have something to learn in regard to what was aptly called the Æsthetics of Anæsthetics by Dr. F. W. HEWITT, in an interesting lecture published in THE LANCET of March 5th, p. 623. His recommendations in regard to the anæsthetist gaining the confidence of the patient and sparing him all unnecessary fear and apprehension acquire further support from Professor CRILE'S experiments, and it would be as well that the patient should be spared the sight of the fear-inspiring garb of the modern aseptic surgeon and his assistants before operation, and also that instruments should be covered if a separate room for anæsthesia is impracticable. We do not wish in any sense to belittle the advantages which have accrued to medicine from the application of surgery, but simply to register a plea for more scientific application of surgical methods, and for careful analysis of records of results with a view to the formulation of the rules which should guide us in the selection of cases for operation.

Annotations.

"Ne quid nimis."

THE METROPOLITAN WATER-SUPPLY.

Dr. A. C. Houston, the director of water examinations for the Metropolitan Board, presented on July 15th his fourth annual report on the Results of the Chemical and Bacteriological Examinations of the London Waters for the 12 months ended March 31st, 1910. Dr. Houston also presented with this his fifth report on Research Work in Connexion with the Metropolitan Water. The reports contain most interesting and important records of careful, painstaking, and accurate labour, and Dr. Houston is to be congratulated on the valuable work which has been done under his direction during the period dealt with in his writings. The purity of the metropolitan water is of vital importance to the health of some millions of consumers, and a very great responsibility rests on those to whom is entrusted the task of rendering the raw London waters fit for drinking purposes. It would be dangerous to trust to merely empirical methods of purification, and it is essential that the engineers of the Metropolitan Water Company, who have immediate control over the working of

the various water stations, should have guidance as to the actual value of each step in the purification process. They should know exactly what can be expected from efficient storage and proper filtration, and their methods should be checked at each step in the processes to which the water is subjected. A careful perusal of the reports of Dr. Houston shows that those in charge of the various water stations have at the present time that necessary scientific help and guidance by the chemical and bacteriological investigations which are continuously being made. They are not working in the dark, but know what is to be expected from the methods they employ, and the results of these methods are checked by the constant analyses that are being made. Where there are imperfections as regards the efficiency of the "plant" and working at any particular station these are known, and hence every endeavour can be made to rectify them. Dr. Houston in his report again emphasises the great importance of adequate storage of all water before filtration; as he puts it, there should be "active storage," not a simply "passive storage," for emergencies. No water should be filtered that has not been stored under suitable conditions for an adequate period. Dr. Houston, though realising the great value of filtration, recognises that it is unsafe to trust to this alone, but with adequate prefiltration, storage, and proper filtration he clearly demonstrates that there is no possible risk of pathogenic microbes finding their way into the water supplied to the consumers. The research report shows that Dr. Houston is continuously criticising and checking the accuracy of his own methods of investigation so that it shall be impossible for any pathogenic water infection to escape detection. It is interesting to learn that the special search for the bacteria of "epidemic diarrhœa" in the raw London waters has yielded negative results. The chemical and bacteriological results for the period dealt with in the reports are satisfactory and reassurring. We fully appreciate the excellent work which is being done by the Metropolitan Water Board in safeguarding the purity of the London water, and we feel assured that the Board will continue to take the fullest advantage which is afforded by the valuable guidance and help it is receiving from the scientific investigations of Dr. Houston.

"PHYSICIAN AND DIPLOMATIST."

UNDER this title an interesting book might be compiled, as the "Memoir of Sir John McNeill" comes opportunely to remind us.[1] The Memoir, indeed, adds another to the many proofs of how easily the "mens medica" can adapt itself to the diplomatist's *métier*. Trophilus the physician, according to Athenæus, when asked to define "the perfect practitioner," replied, "He who can distinguish between what can, and what can not, be done"—he, in fact, who by his knowledge, his experience, and his skill can essay the solution of problems, more or less complex, under conditions demanding decision and promptitude. Are not these the qualities, is not this the definition, of diplomatist and consultant alike—men whose training and whose professional life induce a mental habit in which concentration combines with circumspection, to the avoidance of "raw haste" and its "half-sister, delay," in circumstances, moreover, in which the personal equation is a dominant factor? No wonder, then, that history abounds in examples of the "body physician" passing gradually and inevitably into the "confidential assessor"; the trusted "consultant" in affairs of which he has been the silent if, officially, detached spectator; the Συνειδὼς ἀκροατής (or "thoroughly instructed auditor") who can give wise and opportune counsel in situations analogous to those with which he has had, professionally, to deal. An Arbuthnot at the Court of St. James, a Wyllie at that of St. Petersburg, a Conneau at that of the Tuileries, a Lanza at that of Turin, a Viale-Prilà or a Ceccavelli at that of the Vatican, are types which have their counterpart in many medical practitioners. If ever, in the highest of all *metiers*, there was a man of affairs and a man of action as well, it was the "ambassador in bonds" to the Gentiles; and who can study his discourses in the Acts of the Apostles without recognising what Dr. Hobart has so amply illustrated in a special treatise—the use of terms borrowed from the vocabulary of his companion and "consultant," the "beloved physician"? To revert to the language of diplomacy in the last century, to whom but to the medically qualified Sir James Mackintosh does it owe one of its most characteristic phrases, "masterly inactivity," a coinage in the days when an "expectant treatment" was in clinical favour—a coinage, moreover, for which the continental chancelleries can devise no better equivalent than "inertia, sapientia"? The theme might be carried into many another by-way, all leading up to the point from which we started—the ease with which the "mens medica" can adapt itself to the diplomatist's rôle. Meanwhile, Sir John McNeill's life and work have an interest of their own beyond the special conclusion we have ventured to draw from them, passing as he did from medical qualification and practice to a brilliant diplomatic career, first in our great Indian Dependency, then as an envoy accredited to the Court of the Shah at Teheran, where his experience and observation, as set forth in letters and diaries, are of singular relevance in the crisis through which Persia is now passing. On his return from that mission he became "Chairman of Her Majesty's new Poor-law Department, the Board of Supervision for Scotland," in which the organisation of parochial relief owed much to his forethought and fertility of resource. Yet again, "being dead, he yet speaketh"; his report on the causes of the destitution and distress in the Highlands remaining, as has been authoritatively admitted, "the final word on the question." Later still we find him associated with Colonel (afterwards Sir Alexander) Tulloch on a commission of inquiry into the condition, sanitary and other, of the British army in the Crimea; and, later again, rendering equal, if ill-requited, service in the report of the Chelsea Board of General Officers. The less than little acknowledgment of what he achieved for the State in his long life of 88 years adds a pathetic tone to his memoir and seems to justify the indignant words of Sir David Brewster: "It is a memorable saying, and pregnant with great results, that 'England expects every man to do his duty.' But history, in tears, has written the fatal counterpart upon the wall that 'No man expects England to do hers!'"

[1] Memoir of Sir John McNeill, K.C.B. By his Granddaughter. London: John Murray. Price 15s. net.

THE CHOLERA IN RUSSIA.

THE Local Government Board has issued a circular calling attention to the fact that cholera is again seriously epidemic in Russia, particularly in the St. Petersburg district and at Cronstadt and other Russian ports. The sanitary authorities of British ports are warned to be on their guard against the importation of cholera into this country by vessels coming from places where the disease has appeared or is likely to spread. In this connexion it is essential that medical officers of health of British ports shou d keep themselves informed as to the spread of the present outbreak of cholera, and especially as to the continuance of the disease in parts where it now exists, and its appearance in other parts not yet known to be affected by it. On

Sept. 9th, 1907, the Board issued a revised General Order relating to cholera, yellow fever, and plague on ships arriving from foreign ports to apply and have effect throughout England and Wales, except as regards Bristol and Gloucester, Harwich and Ipswich, and Liverpool and Manchester, the revisions having been introduced chiefly to secure the observance of principles embodied in the Paris Convention of 1903. The main principles on which the regulations have proceeded are that a report with regard to infected vessels arriving from foreign ports should be made to the sanitary authority of the place of arrival, that infected vessels should be temporarily detained pending visitation by the medical officer of health, who may order the further detention of the vessel, the removal of persons suffering, or suspected to be suffering, from plague, cholera, or yellow fever, and the adoption of steps to free the vessel from causes of infection. He may also take such other action as is expedient for the purpose of tracing the further movements of persons allowed to leave the vessel. The regulations in 1907 were made more stringent so as to include "suspected" as well as "infected" ships, and gave to the medical officer of health the power of prohibiting the landing of any person unless he is satisfied as to his name, intended place of destination, and address at that place, placing upon any such person the further obligation that if within five days he changes his address he must notify the new address to the medical officer of health. At the time of writing it is reported that the visit of some Russians from Odessa to the relics of San Nicola di Basi has now introduced the disease into South-Eastern Italy, and several deaths have occurred in the province of Apulia. All Russian ports on the Black Sea and Sea of Azov, including ports on the rivers running into either sea, are officially declared to be infected with Asiatic cholera, and sanitary measures will be applied to any vessel which left any of these ports since August 12th.

SUTURE OF THE FAUCIAL PILLARS FOR HÆMORRHAGE FOLLOWING TONSILLECTOMY.

THE possibility of serious and even fatal hæmorrhage after tonsillectomy must be borne in mind, even when there is no history of a tendency to hæmorrhage. In the *Boston Medical and Surgical Journal* of July 21st Dr. H. H. Gilpatrick states that three cases of severe hæmorrhage which have come under his observation have convinced him that firm and complete approximation of the faucial pillars by suture is the most efficient means of controlling the hæmorrhage. But the difficulty of the operation is so great that he recommends it only as a life-saving measure after ordinary methods have failed. The difficulty is due to the small space in which the work must be done, to failure to obtain a view of the lowest portion of the pillars, where the suture must begin if it is efficient, and to the tying of knots. The difficulty of tying the knots in his first two cases led Dr. Gilpatrick to secure the sutures with perforated shot in the last case. This method, which appears to be new, proved both easy and efficient. The operation usually has to be done without anæsthesia and the condition of the patient is often such that none is needed. Dr. Gilpatrick prefers Rose's position, in which the patient's head is but little elevated above the chest—an important point in an exsanguine patient. At the same time less blood and mucus are likely to be inhaled. A good light is necessary. The jaws must be opened to the full extent and the tongue kept on the floor of the mouth. This is best done with the Whitehead self-retaining gag with attached tongue depressor. A small round-pointed fish-hook-shaped needle is threaded with black linen or silk about 18 inches long. A long-shaped Mayo needle-holder may be used. When the suture is ready the pharynx is quickly wiped out and an ordinary right-angled tongue depressor is introduced so that its tip presses against the base of the tongue at the lowest point of the faucial pillars and away from the side operated on. This gives a view of the point where the needle should be first inserted. The point of the needle is carried behind the posterior pillar and is introduced forwards through both pillars, taking enough tissue to ensure its not tearing out. The needle is pulled through, leaving the tail of the suture sufficiently long to reach beyond the incisors, where it is twisted with the main portion of the suture between the thumb and forefinger. A perforated shot is now slipped over the needle and tail of the suture and the shot is grasped in the jaws of the needle-holder. One hand holds the suture taut, while the other, grasping the needle-holder, forces the shot against the point of suture and crushes it upon the thread. The tail of the suture is now forced been two convenient teeth and the thread is passed as a continuous suture, with intervals of a quarter of an inch, to the other ends of the pillars. When the last suture has been drawn tight the head and tail of the suture are twisted together and secured with another perforated shot as before. If the ends of the thread are left long and secured to teeth the possibility of the shot dropping into the larynx in case the suture should break or tear out is obviated. The advantages of this method are the ease of application, the short time required, and the security with which the bleeding is controlled. As soon as the suture is passed through the pillars the second tongue depressor may be removed, for the placing of the shot does not require the tongue to be held out of the way.

THE DAILY VARIATION OF BODY TEMPERATURE IN HEALTH.

WE have received a reprint of a paper published in the *Journal of Tropical Medicine and Hygiene*, by Colonel Matthew D. O'Connell, R.A.M.C., in which it is suggested that the control or regulation of the body temperature of man in health is not the result of a reflex nervous mechanism, but of the daily meteorological changes in environment. This conclusion has been arrived at as a result of some observations on the effect on body temperature of exposure for short periods to an atmosphere artificially heated and humidified in glass houses. He sums up his conclusions by affirming that body temperature increases from 7 A.M. to 1 P.M. daily, because during these hours loss of heat from the body by radiation is reduced owing to the increase of the temperature of the air, and because the production of heat in the body is increased by the taking of food. An excessive rise is prevented by increased loss due to evaporation owing to the increased drying power of the air, and by conduction and convection owing to the movement of the surrounding air. The rise between 1 P.M. and 6 P.M. is attributed to diminished loss of heat by evaporation owing to the reduced drying power of the air, and also to the increased production from food intake. An excessive rise is prevented by increased loss of heat from radiation, owing to the falling temperature of the air, and increased loss by conduction and convection owing to the movements of the air. The fall of temperature during the night hours is regarded as being due to increased loss of heat by radiation, owing to the fall of atmospheric temperature and to diminished production of heat owing to abstinence from food, an excessive fall being prevented by reduced loss by evaporation, owing to the lessened drying power of the air, and diminished loss by conduction and convection owing to the stillness of the atmosphere. While admitting that changes in the meteorological conditions do influence bodily temperature, we cannot say we are convinced by Colonel O'Connell's reasoning.

His observations were of too short duration, and he does not state if the temperatures were taken in the mouth or rectum. The extraordinary adaptability of the body to extremes of temperature finds a more ready explanation on the current views of a delicately adjusted controlling nervous mechanism.

THE RELATION OF RODENT ULCER TO SQUAMOUS-CELL CARCINOMA OF THE SKIN.

AN interesting paper by Dr. Henry MacCormac in the last volume of the Archives of the Middlesex Hospital[1] is devoted to a consideration of the nature of rodent ulcer. It is generally stated that this form of growth is usually confined to the face, that it begins at an earlier age than other forms of carcinoma, that multiple growths are not uncommon, and that glandular and visceral metastases do not occur. Dr. MacCormac has analysed the cases (43 in number) admitted into the Middlesex Hospital during the seven years 1902 to 1908. The disease was situated on the nose in 18 cases, the cheek in 10, the eyelid in 6, the lips in 4, the temple, forehead, ear, labium majus, and the occipital region in one each. It will therefore be seen that the disease originated away from the face region in two cases. Other instances of this are on record, including its occurrence on the thigh, the sternum, the back, the groin, the forearm, and near the umbilicus, so that the statement that rodent ulcer is confined to the region of the face is by no means accurate. It would also appear that rodent ulcer does not originate at an earlier age than other cancers. In 39 cases, where a fairly accurate estimate of the age of onset could be made, this gave an average of 53·7 years. The occurrence of multiple growths was confirmed, since four cases of Dr. MacCormac's series showed this peculiarity, and many other examples are on record. The explanation offered is that owing to the chronic course of this condition the chance of another growth occurring is greater than with more rapidly growing cancers. No evidence of lymphatic permeation was found and no glandular metastasis. This latter condition has, however, been described by Beadles with microscopic confirmation. An analysis was made of all the cases of squamous-cell carcinoma of the skin during the same seven years, excluding all cases originating on mucous surfaces. Twenty-one examples were found, 12 being confirmed by microscopical examination. The sites of the growths were: the cheek in 6 cases, the eyelids in 3, the nose in 2, the temple in 2, the leg in 2, the brow, neck, thumb, finger, abdomen, and vulva in 1 each. The average age at commencement was found to be 51·5 years. Glandular enlargement was noted five times, but microscopical examinations were only made in two cases, neither being cancerous, hence glandular metastasis is certainly uncommon. From a study of their histological characters Dr. MacCormac differentiates three groups of rodent ulcer. The first comprises the majority of his cases. In this form masses of malignant cells are arranged in islands clearly marked off from the connective tissue cells. At the edge of the growth there is frequently a row of columnar cells like the basal layer of the epidermis. Sometimes cysts are found within the growth and occasionally cell nests. The second group comprises the mixed rodent ulcers, in which, in addition to a growth corresponding to the type just described, there is also a new formation identical with the common squamous-cell carcinoma—i.e., one composed of cells similar to those of the prickle cell layer or stratum Malpighii. The third group includes a few growths in which great difficulty was found in determining whether the neoplasm should be classified as a rodent ulcer or as a Malpighian cancer. The occurrence of prickle cells was established in one case of rodent ulcer of nine years' growth, so that their absence cannot be regarded as characteristic of rodent ulcer; moreover, they can be shown to disappear in many cases of squamous cell carcinoma. Dr. MacCormac concludes that there is but one form of carcinoma of the skin excluding mucous surfaces. If the disease grow slowly the cells assume the rodent type, if more rapidly the Malpighian type.

[1] Archives of the Middlesex Hospital, vol. xix. The ninth report from the Cancer Research Laboratories. London: Macmillan and Co. July, 1910. Pp. 172.

EXCESS OF MORTALITY IN COLLIERY DISTRICTS.

THE excess of mortality from all causes, and more especially the excess of infant and child mortality, in those counties in which coal-mining is a prevailing industry should convince the Local Government Board of the urgent necessity for a special and thorough investigation of the sanitary condition of colliery districts. Dr. A. Newsholme's recently issued and valuable report calls attention to the intimate relation between housing and child-mortality, and to the seriously defective housing of the population which prevails in many parts of the counties of Durham, Northumberland, Glamorgan, Lancaster, Stafford, and the West Riding of Yorkshire, all of which counties include many large colliery districts. The following selected figures from the last issued report of the Registrar-General, relating to the year 1908, accentuate Dr. Newsholme's appeal to the defaulting sanitary authorities in the above-mentioned counties. The death-rate from all causes in England and Wales in 1908 did not exceed 14·7 per 1000, whereas the rate, after correction for abnormal sex and age conditions, was equal to 17·1 in the county of Northumberland, 17·5 in Durham and in Monmouth, 17·8 in Glamorgan, and 18·7 in Lancaster. In the distinctly urban population in the county of London the corrected death-rate in the same year did not exceed 14·7 per 1000, and corresponded with the mean rate in England and Wales. The excess of infant mortality in these counties, including a large proportion of colliery districts, was fully as marked as was the rate from all causes. In England and Wales the deaths of infants under one year of age were equal to 120 to each 1000 registered births; this proportion in the principal colliery counties was, however, equal to 143 in Northumberland, 144 in Lancashire, 147 in Durham, and 151 in Glamorganshire; these were the four highest rates of infant mortality in any of the counties of England and Wales in 1908. Moreover, the counties of Monmouth, York (West Riding), Stafford, and Nottingham, each including large colliery districts, had rates of infant mortality only slightly lower than those of the four beforementioned counties. The mortality of children aged under five years showed similar excess in those counties having extensive colliery districts. The mean rate of mortality in 1908 among children under five years in England and Wales was equal to 40·6 per 1000 of the children estimated to be living at these ages, while the corresponding rate was equal to 51·4 in Northumberland, 53·9 in Monmouth, 55·3 in Glamorgan, and 55·4 in Durham, these rates being higher than in any other of the counties in England and Wales in 1908. Dr. Newsholme severely criticises the insanitary condition of the houses and their surroundings in many parts of the county of Durham, and the intimate connexion between defective housing and mortality from enteric fever is sufficiently obvious. The continuous and steady decline of enteric fever mortality in England and Wales is one of the most conclusive and satisfactory features of undoubtedly general health progress. In 1908 the death-rate from enteric fever in England and

Wales did not exceed 75 per million of the estimated population, whereas the mean annual death-rate from this disease in the 10 years 1871–80 was equal to 326 per million. In the county of Durham, however, the death-rate from enteric fever in 1908 was equal to 146 per million, against an average rate of 186 per million in the five preceding years, and in Auckland, Easington, and Houghton-le-Spring districts of that county the rate from this disease in 1908 exceeded 300 per million. The above-mentioned statistics point conclusively to the serious sanitary shortcomings in all the counties containing extensive colliery districts. Much sanitary improvement may be expected to result from the compulsory appointment of county medical officers of health, but the value of these appointments would be much increased by independent investigation by Local Government Board inspectors of the long-existing defective housing conditions in many of the colliery districts.

PROGNOSIS IN PULMONARY TUBERCULOSIS.

THE problem presented to a practitioner in attempting to arrive at a prognosis in a case of pulmonary tuberculo-is is generally accepted as being a most difficult one. The varied course of the disease in different individuals renders the question exceedingly complex, and it is only by carefully considering every detail and aspect of the case that an opinion can be given. In the *British Journal of Tuberculosis* for July of this year Dr. R. C. Macfie draws attention to some points which are of importance in connexion with this subject. He points out that prognosis in pulmonary tuberculosis is difficult because there are but few means of estimating either the virulence of the seed or the fertility of the soil, and yet a correct estimate of both is essential to a correct opinion. One case may show a very small incipient lesion and yet have received a very large dose of virulent bacilli; another may exhibit a very large lesion and yet show very few toxic symptoms. Some patients appear to have a very mild affection and yet, having "poor resistance," succumb rapidly. Likewise, disease apparently arrested may, without discoverable cause, suddenly flare up again, and acute trouble may as suddenly and inexplicably subside. We agree with Dr. Macfie that a mere microscopic count of the bacilli is futile, for there is no proved constant relation between the number of bacilli discoverable and the virulence of the disease, and, further, mixed infection may any day quite alter the state of affairs. Dr. Macfie believes that in the majority of cases a correct prognosis can be given, but only if all the circumstances of each case be duly considered and weighed, as we have already suggested above. All physicians who have had extended experience in the treatment of phthisis will agree with him in his statement that it is useless to try to forecast the future if we confine our observations to the physical signs. We think, however, that the following sentence requires modification: "The division of cases so often made, according to extent of lung lesion, is a very suitable classification for a pathological museum, but is quite misleading for most other purposes; and the first thing the prognostician has to learn is that the lesion by itself has very limited prognostic value." The expression "extent of lung lesion" is rather ambiguous; taken with the context, "stage of the disease" would have been more appropriate. For instance, the fact that four lobes are involved would influence the prognosis more than the fact that a cavity was present in one lobe, provided that in the latter instance the other lobes were not affected. The contention that the pulse-rate and temperature are at least as important in prognosis as any estimation of râles, rhonchi, and the like is perfectly correct, and fewer mistakes in prognosis would be made if the temperature curve and general condition of the patient were more carefully observed. Closely connected with this subject is another aspect of tuberculosis which promises to claim much attention in the near future—namely, the alleged occurrence of traumatic tuberculosis. It may be remembered that at a meeting of the Life Assurance Medical Officers' Association held in May of this year Dr. F. Parkes Weber read a paper on Traumatic Tuberculosis, Traumatic Pneumonia, and Traumatic Pleurisy. He divided cases in which tuberculosis is said to have been caused by accident into three groups: (*a*) Cases in which a decided traumatism of some kind is followed by signs of either acute disseminated miliary tuberculosis or acute metastatic localised tuberculosis; (*b*) cases in which signs of pulmonary tuberculosis follow or are first noticed after a supposed injury to the lungs; (*c*) cases in which an injury to bones or joints or parts of the body other than the lungs is followed by signs of tuberculosis more or less localised to the region of the trauma. We agree with Dr. Weber in the opinion that in the majority of cases "traumatic tuberculosis" may be explained as the rendering manifest and active of a pre-existing tuberculosis, however limited in extent, quiescent, and latent the former lesion may have been.

THE TENTH REPORT OF THE SLEEPING SICKNESS COMMISSION.

THE Tenth Report of the Sleeping Sickness Commission, recently issued, contains some 13 contributions by the Commissioners and their fellow workers in this country respecting work done from August, 1908, to December, 1909. Several of the papers have already appeared in the Proceedings of the Royal Society, and we have commented upon some of them in the columns of THE LANCET. The subjects dealt with include the experimental treatment of trypanosomiasis, the development of T. gambiense in Glossina palpalis, sleeping sickness in Uganda and the duration of infectivity of the tsetse-fly after removal of the shore population, Glossina palpalis as a carrier of T. vivax, and amakebe, a disease of calves in Uganda. In other papers relating to what are regarded as newly discovered trypanosomes, Colonel Sir David Bruce and his colleagues on the Commission make some observations on the classification of trypanosomes, which they say is at present in a state of chaos. They point out that the three most important questions to be borne in mind in classifying these parasites are: (1) The animals they are capable of infecting; (2) the gravity of the infection; and (3) the carrier of the infection. To these also may be added consideration of the morphology of the trypanosome, its cultural characters, if any, and the results of cross inoculation experiments. It is suggested that if these several facts could be set down for each trypanosome encountered in Africa, the classification of the African species might then be successfully attempted. Only for a few species—e.g., T. gambiense and T. brucei—do we possess such data. As regards a special trypanosome discovered in a horse at Zanzibar by Dr. A. Edington, the Commissioners, who made a careful investigation into the claim that it was a new species, come to the conclusion that it is probably T. dimorphon. But they admit that an important link in the chain of evidence is wanting—namely, the identity or non-identity of the carrier. The Commissioners also describe two new trypanosomes, to the first of which they give the name of T. ingens, owing to its extraordinary appearance. It was found in the blood of a reed-buck in Uganda, afterwards in a bush-buck, and later still in an ox. As the wild animals fed in the same pasture as the ox, it is not surprising that the latter animal became infected. Up to the present the carrier of T. ingens has not been discovered. The second trypanosome, to which the name of T. elephantis has been

given provisionally, was found in the blood of an elephant which was shot in Uganda near Lake Albert. Comparison of this new parasite with T. cazalboui, T. evansi, T. gambiense, T. pecaudi, and T. soudanense was made, and as a result the Commissioners are inclined to hazard a guess that it may be ultimately found to have identity with T. soudanense. Until, however, its nature is better known it is proposed to call it T. elephantis.

MEDICAL TREATMENT OF LONDON COUNTY COUNCIL SCHOOL CHILDREN IN NORWOOD.

A FORM of "concordat" has been recently devised between practitioners in Norwood and the London County Council. The basis of the arrangement is that seven or eight practitioners are to be appointed yearly who are to devote one-half day per week to the treatment of special cases, such as skin diseases, ophthalmic cases, and throat, ear, and nose cases, including the removal of adenoids and tonsils. The County Council undertakes to provide properly equipped premises and a nursing staff. Presumably the equipment provided will include a complete X ray apparatus and a supply of electricity, but these points are not sufficiently clear in the circular which has reached us. The Council demands that a minimum of cases should be treated yearly by each practitioner—viz., 250 ear, nose, or throat cases, 400 eye cases, and 100 ringworm cases, the treatment having to be by X rays. For this work an honorarium of £50 per annum is offered—i.e., £2 for each day of work. This cannot be considered princely pay for arduous and highly specialised work, but there would be less room for cavil if the payments were assured. It is not apparent, however, that the practitioners will receive the amount decided upon. We find that while the committee believes that the financial arrangements made with the London County Council for the maintenance of the centre are fully adequate this can only be proved by experience. And in order to provide for the possibility of their not proving adequate the applicants for posts are required to guarantee a sum not exceeding £15 to meet the deficit (if any) in equipment and working expenses during his year of office. That is in effect that each member of the staff has to provide 30 per cent. of his scanty earnings for the provision of equipment promised by the County Council. The wisdom of the bargain is open to question.

THE OUTBREAK OF CEREBRO-SPINAL MENINGITIS IN LEICESTERSHIRE.

As far as present information goes, the outbreak of cerebro-spinal meningitis in Leicestershire is confined to Melton Mowbray and the villages of Long Clawson, Hose, Nether Broughton, Harby, and Ashfordby. A Local Government Board inquiry may place us in possession of further cases. The disease was first reported at Long Clawson and cases quickly followed at the other places. There were also three cases under treatment in Nottingham on August 26th, which were imported, but not, as would be expected, from Leicestershire. It is believed that Melton Mowbray is now practically clear of the disease. In all there have been 35 cases spread over an area of 50 miles, the subjects being mostly children between the ages of 2 and 11 years. Four deaths have been reported. Only six cases have come under observation in the Melton Mowbray urban district, and these have been distributed over as many weeks. These cases have occurred in six widely separated houses, in most of which there are several other children. They appear to be as completely dissociated as if they lived in separate towns. The cases have been of a very mild type and in no instance here has the disease proved fatal. It is doubtful if some of them would have been diagnosed were it not for the existence of better defined cases in the Melton Mowbray rural district. Most of the cases have been unaccompanied by rash, and we are not aware that lumbar puncture has been resorted to in any instance. We understand, however, that a number of bacteriological examinations of cerebro-spinal fluid from cases in the rural district have been made. The disquieting reports which have appeared in the lay press must therefore be considered somewhat exaggerated, but it is noticeable that the outbreak has been received with nothing like the general apprehension that would have been expressed some three or four years ago, a thing which is of good augury in showing an increasing popular trust in preventive medicine.

VOLKMANN'S ISCHÆMIC CONTRACTURE.

THE deformity known as Volkmann's ischæmic contracture, which follows the too tight bandaging of fractures, is fortunately very rare, and for that reason is not sufficiently recognised. Though described by Volkmann as long ago as 1875, only a very limited number of cases have been recorded in this country. In the *Edinburgh Medical Journal* recently Mr. David M. Greig has reported two cases which emphasise the ease and rapidity with which this permanent deformity may be produced. In the first case a boy, aged 5 years, was knocked down and sustained a fracture about the middle of the left femur. He was taken to hospital, and under anæsthesia coaptation of the fragments proved easy. Extension was applied, four splints were adjusted round the thigh, and the child was put in a double knock-knee splint. This was not done under Mr. Greig's supervision, for he does not apply extension in such young children. A turn of the bandage fixing the extension was evidently drawn too firmly just below the knee, causing pain and swelling of the foot with discolouration of the toes, which necessitated inspection 36 hours later. The limb was put up in a similar way, but the extension was omitted. After a fortnight the splints became loose and were readjusted. The limb was still slightly swollen and blue, and there was a ring of discoloured skin below the knee. After a month the splints were finally removed, and good union had taken place. The condition below the knee suggested an abrasion, and there was a slight abrasion on the outer side of the foot near the little toe. The boy was discharged. The skin below the knee healed, but the ulcer on the foot spread, and some talipes equinus developed. He complained of much pain in the foot and of some in the leg, and there was marked hyperæsthesia. The ulceration of the foot gradually healed and the limb became less sensitive but remained cold and blue. He was readmitted six months later with the foot cold and blue and a slight tendency to swelling. The foot was rigidly maintained in the equinus position. The muscles of the calf were atrophied and hard and the tendo Achillis was drawn up. An attempt to move the ankle joint under anæsthesia produced no improvement. A month later tenotomy of the tendo Achillis was done and the foot was placed at a right angle. After two months he was able to put the foot down flat and walk, though unable to move the ankle joint. The foot became bluer and more ulcerated. The ulceration healed and 15 months later there was slight movement at the ankle and walking had improved, but the muscular atrophy remained and the leg was cold. In the second case, a lad, aged 18 years, sustained a compound fracture of the bones of the right forearm in a fall. The radius was fractured near its upper end and the ulna lower down. The fracture was placed in as good position as possible, although the lower fragment of the ulna was drawn somewhat towards the radius. Anterior and posterior

splints were applied and left on for two days, causing much pain. The splints felt tight and the hand was swollen and dark blue. On the third day the splints were readjusted and the swelling rapidly diminished. When the splints were finally removed marked anæsthesia, flexion of the fingers, and inability to straighten them were found. Four months later he came under Mr. Greig's observation with considerable atrophy of the right forearm. On the anterior surface and above the middle was an irregular cicatrix, due to the compound fracture. A little lower over the back of the ulna was a 2-inch vertical cicatrix, said to be due to the pressure of the splints or bandages. The fingers were flexed at the interphalangeal joints and could not be extended. Pronation and supination were considerably interfered with, and flexion and extension of the wrist diminished. The thenar and hypothenar eminences were much wasted. There were complete anæsthesia of the fingers and partial anæsthesia of the rest of the hand. To investigate the condition of the median and ulnar nerves they were dissected out almost in the entire forearm. They were to some extent perhaps adherent to scar tissue but not involved in callus. Ten months after the accident sensation was practically normal and the fingers were still flexed but could be straightened when the wrist was flexed. Volkmann's contracture is due to necrobiosis of muscle from deprivation of its blood-supply by tight bandaging. It usually occurs in the flexor muscles of the forearm of children after fractures near the elbow. These are attended with much effusion of blood which may render the distal circulation difficult even before the bandage is applied. There is always pain, which ought to excite suspicion that all is not right, with swelling and congestion. On readjusting the bandages these symptoms disappear but necrobiosis has been produced. A similar effect, ischæmic neuritis, may be produced in the nerves.

WE regret to announce the death of Professor William James, the well-known psychologist, who occupied at the time of his death the chair of philosophy in Harvard University.

A TOWN PLANNING CONFERENCE IN LONDON.—The Royal Institute of British Architects has announced a Town Planning Conference which will be held in London during the week from Oct. 10th to 15th next. It says that the recent passing into law of the Housing and Town Planning Act of 1909 has rendered the careful consideration of the architectural development of town planning a matter of immediate importance, and that therefore the conference has been organised to study the questions involved in the improvement and extension of our cities, with special reference to the artistic and constructional problems involved. His Majesty the King has graciously extended his patronage to the conference and many distinguished gentlemen have consented to become vice-presidents. The Honorary President is Mr. John Burns, the President Mr. Leonard Stokes, President of the Royal Institute of British Architects, and the Secretary-General of the conference Mr. John Simpson, F.R.I.B.A., to whom all communications should be addressed at the Royal Institute of British Architects, 9, Conduit-street, London, W. The preliminary announcement is also countersigned by Mr. Ian MacAlister, who is the secretary of the Institute. The membership fee will be 1 guinea. By the courtesy of the Royal Academy an exhibition of models and drawings illustrating important town planning schemes in various countries will be held in the galleries of the Royal Academy, Burlington House, Piccadilly, and there will be an exhibition of literature, maps, and drawings in the library of the Institute. The conference dinner will take place at the Hotel Cecil on Oct. 12th. Visits will be paid to Letchworth, the London County Council housing schemes, Hampstead Garden City, Port Sunlight, Bournville, Bath, and Oxford.

THE BRITISH MEDICAL ASSOCIATION.

SEVENTY-EIGHTH ANNUAL MEETING IN LONDON.

THE MEDICAL MUSEUM.

THE Medical Museum this year replaced the former Pathological Museum, and the success of the new departure has fully justified the change. The museum was divided up into a number of sections, each section being under the care of an expert honorary curator, who had selected a few subjects to deal with, and had collected from all available sources such specimens as illustrated in the most useful manner the subjects chosen. As a result the museum contained a large number of series of exhibits rather than a collection of miscellaneous items. Special attention was paid to methods, and the honorary curators, as far as was possible, offered to the visitor an ocular demonstration of recent advances and of the methods employed both in practice and in the laboratory for the diagnosis and treatment of disease. Much attention was given to the section dealing with anæsthetic apparatus, which would not have found a place in former years, when the museum was described as "pathological," but which in a museum entitled "medical" was certainly a valuable addition; Dr. Ada M. Browne, the honorary curator, had collected many historical as well as modern anæsthetic apparatus. Another section, which was unusual, was that organised by Dr. A. J. Rice-Oxley, in which engravings, prints, and other objects of medical interest were exhibited. Messrs. E. Leitz, of London, placed over 300 microscopes at the disposal of the museum, being more than three times the number of instruments that have on previous occasions been lent to the Association. The museum catalogue is valuable as a permanent record of the collection, and with this end in view as much descriptive detail of each exhibited specimen as was available and as could be introduced into a catalogue was included.

The Section of Bacteriology had for its honorary curator Dr. J. Henderson Smith. The method of isolating and identifying bacillus typhosus was shown by plates illustrating the various media in use for the isolation of the typhoid bacillus from mixed cultures of this and other organisms. There were exhibits illustrating their identification by the fermentation of carbohydrates, showing the action of typhoid bacilli in this respect in comparison with other organisms; there were also tubes showing the identification by means of "complement deviation" illustrating the technique of the Bordet-Gengou reactions in general, and tubes demonstrating identification by means of agglutination. There were charts illustrating the use of vaccines in therapeutics and the anaerobic methods of culture.

The Section of Tuberculosis, with Dr. G. F. Petrie as honorary curator, contained specimens illustrating the examination of milk for tubercle bacilli lent by the Lister Institute of Preventive Medicine, and specimens of tuberculin. Dr. C. Russ contributed the apparatus used in electrical experiments with bacteria; the instruments used are: a source of current (conveniently obtained from Leclanché's cells) which is distributed by means of a switch-board containing an ampère-meter, volt-meter, contact-maker, and reverser to a testing stand. The latter consists of a platform supporting a series of glass U-tubes, which are held vertically in spring holders and into the upper ends of which platinum foil electrodes descend by the lowering of a moving beam fastened by a screw-clamp to the required level. By that assembly of instruments a current was measured and directed through a series of U-tubes in which suspensions of bacteria had been placed. As an alternative to the U-tube stand, the current might also be passed from the switchboard through another apparatus, which consisted of two upright standards holding two adjustable electrical terminals, which were immersed in the limbs of a modified U-tube, and in one of which a bacterial trap was also fixed. The whole was mounted on a simple platform. The results obtained are as follows: When a constant current traverses a suspension of bacteria in certain electrolytes there ensues a migration of the organisms to one or other electrode. This occurs whether the organisms are dead or living and motile or non-motile. The aggregation at one electrode varies with the nature of the fluid (electrolyte) used. In certain fluids there is no

movement. This property of movement by the electric current was utilised to cause the aggregation of tubercle bacilli at one electrode placed in tuberculous urine, and by arranging the electrode at which they would arrive in the form of a bacterial trap, the bacilli were withdrawn from a series of such urines and recognised in stained films, prepared from the trap contents.[1] The means of combating tuberculosis were demonstrated and there was an exhibit of specimens of tuberculosis and other diseases of the lower animals, mounted in solid media by a new method, lent by Professor Sheridan Delépine.

The Section of Protozoology was entrusted to Miss Muriel Robertson as its honorary curator, and the excellent specimens in this section were lent by her and Professor Minchin from the valuable collection in the possession of the Protozoological Department of the University of London.

The Section of Tropical Medicine had Dr. Hutton as honorary curator, who showed series of blood films demonstrating the three varieties of malarial parasites. A series of specimens showed the development of the malarial parasite in the mosquito, and there was a good section of human spleen from a fatal case of kala-azar which showed the Leishman-Donovan bodies in the spleen cells. The development of the filaria larvæ in the mosquito was demonstrated, and lantern slides illustrating the parasite *Leishmania tropica* seen in smears of the discharge of the oriental sore of Cambay, stained by Giemsa, were shown.

The Section of Cancer Research was under the honorary curatorship of Dr. J. A. Murray. It contained the exhibit of the Imperial Cancer Research Fund, consisting of wall charts illustrating statistical investigations, the phenomena of immunity induced against propagable tumours, and the development of sarcoma during the propagation of two transplantable mammary carcinomata of the mouse; lantern slides illustrating the ethnological and zoological distribution of cancer, the reproduction of the lesions of spontaneous cancer by transplanted tumours, the phenomena of growth, and the histological features of propagation in normal and in immune animals; bottle specimens illustrating malignant new growths in the cow, and spontaneous and transplanted tumours in mice and rats; and microscopical preparations of malignant new growths in mice. The exhibit of the Cancer Research Department of the Middlesex Hospital was a series of photographic plates, showing the silver deposition caused by various animal and other substances under conditions of complete darkness (skotographs), the silver deposition being unrecognisable until the plate has been developed. Also a series of microscopic slides, showing the absence of Altmann's granules from sarcoma and malignant growths generally, and their presence in inflammatory tissue, non-malignant growths, and normal tissues. The exhibit of the Pathological Department of the Cancer Hospital, Brompton, consisted of specimens of malignant disease of various human organs. The exhibit of the Cancer Research Department of this hospital consisted of specimens showing malignant disease (spontaneous and experimental) in the mouse.

Physiological and pathological chemistry was represented in a section with Mr. J. H. Ryffel as honorary curator. It contained samples of blood illustrative of carbon monoxide poisoning and Ryffel's method of estimating lactic acid in urine, Rothera's test for acetone in urine, and the apparatus used for the determination of the dissociation curve of blood.

The Section of the Alimentary System contained specimens of pharyngeal and œsophageal pouches, of "idiopathic" dilatation of the œsophagus, of pyloric stenosis in infants, of Hirschsprung's disease, of diverticula of the colon, of sarcoma of the alimentary canal, of gastric ulcer experimentally produced by the injection of gastro-toxic serum lent by Dr. Charles Bolton, and two specimens of cirrhosis of the liver in patients who were teetotalers, lent by Dr. Braxton Hicks. One was a typical "gin-drinker's liver" weighing 26 ounces, removed from a man, aged 39 years, who was a total abstainer. Two months before death he was admitted with ascites, and had a history of blood spitting and epistaxis of six months' duration. The other was a typical multilobular cirrhosis of the liver from a woman, aged 28 years, who had been in the incurable ward of the Westminster Hospital for 16 years with extreme arthritis deformans. The liver weighed 21 ounces.

The sections of the Genito-urinary System and of Gynæcology attained a high degree of excellence.

[1] See THE LANCET, July 3rd, 1909.

The Section of the Respiratory System showed specimens of glanders, actinomycosis, hydatid cysts, bronchiolectasis, and syphilis.

The Section for the Cardio-Vascular System was under the charge of the honorary curator, Dr. T. Lewis. The anatomical exhibits showed that the research work of the past few years had brought to light certain new structures in the mammalian heart. Among the most important of these is the sino-auricular node, a specialised tissue lying at the junction of the superior vena cava and the right auricle. In this tissue, of which the muscular fibres are small and scattered amongst a dense meshwork of connective tissue and nerves, the normal heart beat probably takes its origin. The auriculo-ventricular bundle courses from the right auricle in the neighbourhood of the coronary sinus termination to the membranous septum of the ventricles, where it divides to distribute itself to the right and left ventricles respectively. At its commencement a "node" is situated (the so-called "node of Tawara") consisting of specialised tissue, not unlike that of the sino-auricular node. The auriculo-ventricular junctional system, which has been proved to convey the impulses of the normally beating auricle to the ventricle was exemplified by macroscopic and microscopic specimens. When the bundle has divided into its two main branches for the supply of the right and left ventricles respectively, these branches pursue their course towards the papillary muscles and break up into a complex arborisation and network (the so-called "network of Purkinje"). The structure of this network is very special, the cells are very large, fibrillation is sparse, and they are often multinucleated. The general arrangement of the structures comprising the auriculo-ventricular junction system was shown in diagram. The structure of Purkinje's substance was exemplified by exhibits. When the auriculo-ventricular bundle is damaged, either by experimental interference or by disease, the impulses which normally pass through it are hindered in their transmission from auricle to ventricle and a condition known as heart-block results. Clinically, damage to the bundle has been repeatedly found to give rise to heart-block. The ventricle in this condition beats slowly (more slowly than the auricle), and frequently the condition is accompanied by phenomena dependent upon deficient cerebral nutrition. The Adams-Stokes syndrome is a condition in which bradycardia and epileptic phenomena are combined. Exhibits showed lesions of the auriculo-ventricular bundle in patients who developed this syndrome.

It is now known that many disturbances of the heart's mechanism may occur in patients. Our knowledge of such irregularities is chiefly derived from observations from two new methods: the venous pulse method and the electro-cardiographic method. The first purpose of graphic record in the investigation of irregularities is the determination of the time at which auricle and ventricle respectively enter systole. The exhibit showed that the instrument generally employed for venous pulse work is Mackenzie's polygraph; it consists of a registering apparatus and two writing tambours, which are connected to receivers resting upon an artery and vein respectively. The arterial record gives, after certain corrections are made, the time of onset of ventricular systole (this may also be obtained by curves taken from the apex beat). The venous record is an approximate duplicate of intra-auricular pressure and gives the time of onset of auricular systole. The venous pulse consists of three waves—auricular, carotid, and ventricular—and the interpretation of these waves and the dips which intervene between them were illustrated. The time relationships of the venous curve to the curves of carotid, aortic, ventricular, and auricular pressure were also shown. The second method employed, the electro cardiographic, also gives the times of onset of auricular systole and ventricular systole. Electro-cardiograms are obtained by means of a highly sensitive galvanometer, the invention of Professor Einthoven. The patient is placed with two limbs (usually the right arm and the left leg) in baths of salt solution, and these baths are connected to the galvanometer. The electric current produced in the body as a result of the heart beat moves a fine fibre, the shadow of which is magnified and photographed. Both auricle and ventricle yield currents which may be recorded. A diagram of a typical normal electro-cardiogram was given.

It has been said that the normal heart beat is probably generated in the neighbourhood of the sino-auricular node.

This was shown by an electro-cardiographic method. The shape of the electro-cardiogram is determined by the direction in which the heart muscle contracts. If it contracts in the normal direction the electro-cardiogram will be normal. If a contraction is started at an abnormal point it will travel in an abnormal direction, and will give rise to an electro-cardiogram of a distinctive type. Now the auricular contraction and the ventricular contraction each have their representatives in the electric curve. If an abnormal beat is artificially started in the auricle at a point distant from the pacemaker, the resultant auricular curve will be abnormal. The ventricular curve will be much the same in whatever part of the auricle the beat is started, for it will always start the ventricle contracting from the same point.

One of the simple forms of irregularity of the heart may be taken as a type. The ventricular extra-systole is a premature beat which, arising in the ventricle before the normal response to the auricle is due, produces an interruption of the ventricular rhythm. It does not disturb the auricular rhythm. The ventricle, having contracted prematurely, awaits the arrival of the next auricular impulse; the pause so produced is termed the "compensatory pause." Diagrams showing the mechanism of the heart and the curves produced in carotid and jugular tracings by ventricular extra-systoles were shown. The appearances found in radial pulse curves and the auscultatory signs when ventricular extra-systoles, seldom or frequent, early or late, interrupt the normal rhythm were illustrated. It was clearly shown that several ventricular extra-systoles may follow each other in rapid succession (constituting a short paroxysm of tachycardia), yet the fundamental rhythm may not be disturbed.

The mechanism of the heart's action when auricular extra-systoles are present was shown and was contrasted with that occurring with ventricle extra-systoles. Tracings were shown of paroxysmal tachycardia which may be due to one or other of the following causes: neurogenous, rapid alterations of frequency as a result of nerve influences, and cardiac, due to the degeneration of new impulses (of pathological type) in some portion of the cardiac musculature. The impulses are subdivided into successive impulses: (*a*) an auricular form, and (*b*) a ventricular form; and multiple impulses—auricular pulsation. The cardiac forms and those which arise as a result of the formation of successive impulses of a pathological type were dealt with by means of tracings. Demonstrations indicated that this impulse formation is independent of the withdrawal of vagal impulses. Figures were shown to prove that the paroxysm arises in the ventricle, and demonstrated the possibility of the origin of a spontaneous and rapid rhythm away from the heart's pacemaker. New and dominating rhythms must now be recognised as an important factor in cardiac pathology. The polygraph curves showed the abrupt onset and offset of the paroxysms and the long pauses which succeed them. These are features of dislocated rhythms. The electro-cardiographic curves demonstrated definitely that the rhythms are dislocated or ectopic.

Auricular fibrillation gives rise to the commonest clinical irregularity. The proof of the condition in man was shown by a close comparison of clinical and experimental curves. By electro-cardiograms it was shown that oscillations are maximal in the patient when the leading-off electrodes are placed over the right or superficial auricle, and that the oscillations are maximal in the animal when the electrodes are placed on the auricle. Auricular fibrillation is frequently paroxysmal. When the normal rhythm returns the oscillations are replaced by variations, representative of the returned and coördinate auricular activity. Complete heart irregularity occurs in the horse, and the auricle may be seen to fibrillate on opening the chest.

When there is damage to the conduction of impulses from auricle to ventricle heart block is seen. It was shewn to occur in several grades. At first the interval between the onsets of auricular and ventricular systoles is increased. Then ventricular beats are occasionally missed. Later ventricular beats are missed at frequent intervals. Lastly, separate rhythms are established in auricles and ventricles. Auricular fibrillation is sometimes encountered in patients with slow pulses. That the combination is due to the presence of heart block and fibrillation in the same subject was shown by tracings.

Curves were shown exemplifying a condition in which there is a variation in the strength of alternate heart beats. Nothing is known of its mode of production, but it is of great importance on account of its grave prognostic significance.

Extra-systoles started in the ventricle are not uncommonly met with as a complication of auricular fibrillation; when occurring regularly they give rise to the coupled rhythm, the coupling being most frequently seen when digitalis is being administered. Tracings were given in support of this.

The Section of Neurology, with Dr. S. A. K. Wilson as honorary curator, was most interesting, the methods and instruments used for the investigation of the central nervous system attracting great attention. Progress in our knowledge of the structure and function of the central nervous system is likely in the immediate future to depend a good deal on the application of fine insulated needles for the production of electrolytic lesions or electrical excitation by Dr. R. H. Clarke's stereotaxic instrument.

The Section of General Surgical Pathology, under the honorary curatorship of Dr. J. A. Braxton Hicks, contained specimens of splenic enlargements showing most of the causes of enlargement of the spleen, the diagnosis for the main part resulting from a consideration of the general aspect of the case, together with a careful blood examination. The series of specimens of ulcerations of the tongue showed particularly those due to syphilis, and also the relation of such chronic ulcerations to epithelioma. Diagrams and pictures were exhibited of cancer of the tongue and conditions which may be mistaken for cancer. There was a series of specimens illustrating some of the tumours that may occur in connexion with muscles.

In the Section of Dermatology there was an excellent series of wax casts, plates and photographs of skin diseases, and wax casts of some of the cutaneous lesions of syphilis. Plates and photographs of skin diseases were also on view, and photographs illustrating the dermatitis caused by daffodils and by handling large masses of the flowers in the Scilly Islands.

An exhibit by Sir Jonathan Hutchinson illustrated the doctrine of palæogenesis in the colouration pattern in various animals, and the relation of this pattern to certain peculiar conditions displayed in various diseases. The exhibit suggested that the pattern, with endless modifications of detail, may be traced through the whole animal world.

The Section of Ophthalmology, with Mr. M. S. Mayou as honorary curator, contained photographic plates illustrating various ophthalmic diseases, drawings of congenital cataract, and tests for colour-blindness.

The Section of Laryngology, under the honorary curatorship of Mr. W. D. Harmer, and the section of Otology, with Mr. Sydney R. Scott as honorary curator, and the section of Radiology were excellent examples of how such exhibits shou'd be organised.

To detail in any comprehensive way the contents of the museum is obviously impossible; enough has been said to show why it was a thoroughly satisfactory and successful feature of the meeting of the Association.

BRUSSELS MEDICAL GRADUATES' ASSOCIATION.—The annual meeting and banquet was held in the Kaiserhof Restaurant of the Brussels Exhibition on August 6th. Amongst those present were Dr. Richard Paramore (President), Sir Griffith Boynton, Mr. E. Mortimer Ehrlich, Mr. W. F. Kirby, Dr. W. E. Kirby, Dr. E. O. Fountain, Dr. F. Howard Humphris, and Dr. Arthur G. Haydon (honorary secretary). The President read letters of regret a-being unable to attend from Professor G. Rommelaere (President of the University), Professor J. Thiriar, Professor C. T. Hanben, and M. Lavachery (secretary of the University). He then gave the toast of "The Visitors," coupled with the name of Sir Griffith Boynton, who expressed his pleasure at being able to attend, and proposed the toast of "The Brussels Medical Graduates' Association." Dr. Haydon said that during the 25 years of the existence of this association this was the first annual meeting and dinner which had been organised in Brussels, and he hoped that the next meeting held abroad would be in Paris at the exhibition of 1920. Dr. Francis H. Edwards was elected president for the ensuing year; Dr. Fountain, vice-president; Dr. Major Greenwood, honorary treasurer; Dr. Haydon, honorary secretary; and ten members of council. All past presidents were elected vice-presidents.

THE METROPOLITAN WATER-SUPPLY.

THE Fourth Annual Report on the Results of the Chemical and Bacteriological Examination of the London Waters for the 12 months ended March 31st, 1910, by Dr. A. C. Houston, the Director of Water Examination to the Metropolitan Water Board, was presented to the Board on July 15th as an appendix to the reports of the Water Examination Committee. The following is an abstract of Dr. Houston's carefully drawn up report:—

The introduction.—Dr. Houston refers to the reports of the Balfour Commission of 1893, of the Llandaff Commission of 1899, and of the Arbitration Court of 1902, and from these findings he states that in the past the "safety" of London water was based largely on the following circumstances: (1) The health prosperity of London, both as regards diseases in general and epidemic water-borne disease in particular; (2) the alleged safety of a sand-filtered water; and (3) the innocuous character, as some persons have assumed, of the raw river water.

Dr. Houston deals with these points seriatim, and points out as regards (1) that it is unsafe to rely on the health prosperity of London as a reliable safeguard against future water-borne epidemics. It is well known that during the last 30 or 40 years there has been in London a comparatively low general death-rate and enteric fever death-rate, but it is pointed out that it is always dangerous to prophesy future security from past and present immunity. The concrete instance of the Lincoln epidemic of typhoid fever in 1904 and 1905 is given as an illustration "where an epidemic caused in less than six months as many deaths as had occurred from a similar cause during the previous eighteen years," and this example illustrates the danger attending the interpretation of health statistics without the ballast of epidemiological experience.

(2) Dr. Houston states that though he is fully convinced of the remarkable bacteriological improvement effected by sand filtration, he still remains a sceptic as regards its absolute value. He says that there is no convincing evidence that sand filters exercise a special selective action in the separation of pathogenic bacteria, and we know that excremental bacteria may pass through them in much the same proportion as innocuous microbes. Sand filtration reduces the number of bacteria about 98 to 99 per cent., but if the filters exercise no special selective action the reduced number of bacteria which pass through the filters are as significant as those which are left behind, the difference being a reduction of numbers only. It is not known how many microbes of of enteric fever, for example, would be necessary to cause the disease in a particular individual, but given a water polluted with typhoid bacilli it is obvious, as Dr. Houston points out, that filtration means only a reduction of dose of pathogenic microbes to the consumer and does not free him from the risk of infection. The Lincoln epidemic is referred to as an illustration of the danger of relying on filtration as an efficient safeguard, for the polluted water of the river Witham was filtered, though not stored, antecedent to filtration.

(3) The assumed innocuous character of the raw river water was apparently based chiefly on an exaggerated belief in the doctrine of the self-purification of rivers, and the favourable health statistics of London were brought forward as arguments in favour of this view. Dr. Houston points out the wide gulf between "prospective security" and "past immunity," and also states that it is well known that the Thames and Lee above their intakes contain water far from pure, chemically and bacteriologically.

In his first annual report (1905) Dr. Houston showed that the raw waters above the intakes contained a considerable number of excremental bacteria, and that the filtered waters in the case of these works using raw river water also contained excremental bacteria, though in fewer numbers, the difference bacteriologically being one of quantity only. There has been a great improvement during the last five years as regards the purity of the filtered river waters, owing to the proper appreciation, as the result of Dr. Houston's researches, of the most important part played by storage antecedent to filtration. As regards excremental bacteria, the purity of the filtered river water now (1910) is considerably greater than that which was obtained in 1905. It is pointed out that the first duty of the Water Board is to control as far as possible the multiple pollutions affecting the watersheds of the Thames and Lee rivers. The conservancy of these rivers rests in the hands of the "Thames and Lee Conservancies," and all that the Water Board can do is to bring pressure to bear through their representatives on boards in cases where the purity of the supply appears to be threatened.

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Reliance should no longer be placed on sand filters as an absolute and final safeguard. Storage reservoirs should no longer be used merely to cover periods of emergency.

The aim now should be to abstract *raw* river water as judiciously as possible, to store it for as long a period as is possible, and to filter it as perfectly as is reasonably practicable.

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In previous reports it has been pointed out that it is not only necessary to endeavour to reduce the pollutions of the Rivers Thames and Lee and to store, as well as to filter, the raw water in a satisfactory manner. It is also necessary to guard against the possibility of accident. In this connection questions of drainage, health of workmen, suction of impure water into water mains, laying of new mains, alteration to existing mains, condition of service reservoirs, &c., deserve attention.

To a progressively increasing extent the safety of London's water-supply is being secured; it needs to be remembered, however, that it is useless to purify water to a high standard of excellence if the door is left open to final avoidable accident.

There is a growing tendency to regard any sudden accidental gross infection as of most dangerous significance, and to consider more constant but highly diluted pollutions as relatively speaking of lesser importance. The method of water purification now in progress (storage) renders the position "safe" as regards the river water provided that no *fresh* and dangerous contamination takes place in connection with the storage reservoirs, the filter works, the service reservoirs or the delivery mains.

It is true that the purest water-supplies in the world are also open to the same objection—but in view of the grave interests involved, every effort should be made to guard against the possibility of accident.

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THE METROPOLITAN WATER-SUPPLY.

THE Fourth Annual Report on the Results of the Chemical and Bacteriological Examination of the London Waters for the 12 months ended March 31st, 1910, by Dr. A. C. Houston, the Director of Water Examination to the Metropolitan Water Board, was presented to the Board on July 15th as an appendix to the reports of the Water Examination Committee. The following is an abstract of Dr. Houston's carefully drawn up report:—

The introduction.—Dr. Houston refers to the reports of the Balfour Commission of 1893, of the Llandaff Commission of 1899, and of the Arbitration Court of 1902, and from these findings he states that in the past the "safety" of London water was based largely on the following circumstances: (1) The health prosperity of London, both as regards diseases in general and epidemic water-borne disease in particular; (2) the alleged safety of a sand-filtered water; and (3) the innocuous character, as some persons have assumed, of the raw river water.

Dr. Houston deals with these points seriatim, and points out as regards (1) that it is unsafe to rely on the health prosperity of London as a reliable safeguard against future water-borne epidemics. It is well known that during the last 30 or 40 years there has been in London a comparatively low general death-rate and enteric fever death-rate, but it is pointed out that it is always dangerous to prophesy future security from past and present immunity. The concrete instance of the Lincoln epidemic of typhoid fever in 1904 and 1905 is given as an illustration "where an epidemic caused in less than six months as many deaths as had occurred from a similar cause during the previous eighteen years," and this example illustrates the danger attending the interpretation of health statistics without the ballast of epidemiological experience.

(2) Dr. Houston states that though he is fully convinced of the remarkable bacteriological improvement effected by sand filtration, he still remains a sceptic as regards its absolute value. He says that there is no convincing evidence that sand filters exercise a special selective action in the separation of pathogenic bacteria, and we know that excremental bacteria may pass through them in much the same proportion as innocuous microbes. Sand filtration reduces the number of bacteria about 98 to 99 per cent., but if the filters exercise no special selective action the reduced number of bacteria which pass through the filters are as significant as those which are left behind, the difference being a reduction of numbers only. It is not known how many microbes of of enteric fever, for example, would be necessary to cause the disease in a particular individual, but given a water polluted with typhoid bacilli it is obvious, as Dr. Houston points out, that filtration means only a reduction of dose of pathogenic microbes to the consumer and does not free him from the risk of infection. The Lincoln epidemic is referred to as an illustration of the danger of relying on filtration as an efficient safeguard, for the polluted water of the river Witham was filtered, though not stored, antecedent to filtration.

(3) The assumed innocuous character of the raw river water was apparently based chiefly on an exaggerated belief in the doctrine of the self-purification of rivers, and the favourable health statistics of London were brought forward as arguments in favour of this view. Dr. Houston points out the wide gulf between "prospective security" and "past immunity," and also states that it is well known that the Thames and Lee above their intakes contain water far from pure, chemically and bacteriologically.

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three remand homes. The rest of the institutions are made up of the office of the Board, the central stores, the bacteriological establishment, the training ship, and the land and river ambulance services.

Statistics.

During the year ending Dec. 31st, 1909, there were 15,384 admissions of scarlet fever, 4603 of diphtheria, 331 of enteric, 4 of typhus, 2 of cerebro-spinal fever, and 15 of small-pox. There are always more cases notified than admitted, but the disproportion is greatest in the cases of enteric and cerebro-spinal fever, of which there were 1043 and 111 notifications respectively. On Jan. 29th, 1909, the Children's Infirmary was opened at Carshalton with 1000 beds, and is now the largest children's hospital in the world. The children admitted are the "sick, convalescent, and debilitated children" from the metropolitan workhouses and infirmaries. From Jan. 29th to December, 1909, 2042 patients had been admitted, of which 1027 were discharged, 113 transferred to other institutions of the Board, 89 died, and 813 remained. Of these patients, no fewer than 662 were infants under 3 years of age, an unexpected fact which led to the nursing staff being largely increased. Among the cases treated were 317 of various tuberculous diseases, 159 of otorrhœa, 170 of marasmus, 357 of debility after various illnesses, 101 of rickets, and 79 of valvular disease. Nearly 100 operations were performed, ranging from amputation at the hip to removal of adenoids.

Ambulance Question.

The report of the Ambulance Committee records steady progress. The western ambulance station is now equipped with seven motor ambulances, the eastern will be the next to be transformed, and the other stations are being introduced to the advantages of motor vehicles. The committee express surprise that facilities should have been granted for the passage of a private member's Bill in Parliament conferring powers on the London County Council to maintain an ambulance service within the County of London after the Board had been recommended as the authority for this purpose by a Departmental Committee of the Home Office, the London County Council concurring. Perhaps it may be found possible for the Board and the London County Council to undertake a joint scheme, but our readers know that the whole ambulance question is a fruitful source of dispute.

Finance.

One of the most satisfactory features of the Board's report is that of the financial side, for although the daily average number of inmates of its institutions was 75 in excess of the previous year, its net expenditure was less by £44,164, while for the third year in succession it has not been necessary to raise any loan, and the Board has been able to reduce its indebtedness by £184,399, leaving its debt of £2,840,645 more than twice covered by the value of its institutions. The debt, it is estimated, will be completely paid off in 12 years, and the citizens of London will then possess absolutely over £6,000,000 worth of increasingly valuable property. This result of the managers' finance is highly satisfactory, and we presume in saying this that the expectations are well founded.

Royal Commission on the Poor-laws.

The report this year possesses a particular interest in view of two events: (1) the reports of the Royal Commission on the Poor-laws; and (2) the recent decision of the Board (subsequent to the report) to admit cases of measles and whooping-cough. If the recommendations of the Poor-law Commission were carried into law, either on the Majority or Minority plan, their effect would be to do away with the Board and hand over its functions to another authority. The reasons against this are weighty, and appear in the excellent record of service possessed by the Board and in the value of the experience of its members and of its organisation. Both Minority and Majority Commissioners bear testimony to the excellence of the Board's work and have therefore, it appears, fully weighed the reasons against the changes they propose. If, and when, the findings of the Commissioners become law, every effort will presumably be made to conserve what is valuable of the Board's present constitution. Some changes we should welcome, but no case can be made out for anything approaching abolition. If the powers of the Board were handed over to a statutory committee of the London County Council, a proportion of the present members of the Board would doubtless be coöpted on to that committee, which might, indeed, not be so very materially different in *personnel*. The matter is, at any rate, one for detailed adjustment in the committee stage of a Bill in Parliament when the time arrives. The prospect of change does not appear very imminent.

Admission of Cases of Measles and Whooping-cough, &c.

The decision to admit measles and whooping-cough cases, with also puerperal fever and erysipelas, is a supremely important matter. It has been found for some years that there is a large margin of beds unoccupied in ordinary fever hospitals and a larger excess in the small-pox hospitals. This is so marked that the managers recommend that in future only the Long Reach Hospital and the shore buildings adjoining be reserved for small-pox, the Joyce Green Hospital being used for other infectious diseases. It is safe to do this in the managers' opinion, for they say, "experience has so fully established the fact that high numbers of small-pox correspond with low numbers of scarlet fever, and *vice-versâ*," a fact which places a great deal more accommodation at the managers' dispo-al. The use to be made of the 800 beds at the Orchard Hospital will depend on the experience gained in dealing with the additional cases suggested. The reason which has led the managers to include measles and whooping-cough is, first and foremost, not the prevention of infection but the desire to reduce the mortality from these diseases, which in the years 1891–1900 was greater than that from scarlet fever, diphtheria, and enteric fever combined. Dr. H. E. Cuff, the medical officer of the Board for general purposes, has brought forward very strong evidence as to the advantages of providing hospital treatment for measles and whooping-cough, and considers that this can be done in ordinary infectious hospitals without risk of interchange of infection. The measures of disinfection required are simple and inexpensive, and the only alteration in the internal arrangement of the hospital needed will be the allocation of separate receiving rooms for new patients. It is hoped that the admission of these cases will prevent the sequelæ of measles and whooping-cough, which, as Dr. Cuff says, are more serious in their after-effects on the future efficiency of the individual than those which are associated with scarlet fever.

Additional Provision for Sick Children.

The meeting of the Board on July 8th which decided to admit measles and whooping-cough also decided to make further provision for the sick and debilitated children from the workhouses and infirmaries, the accommodation at Carshalton having proved inadequate. The Park Hospital was decided upon to act as an adjunct to the Infirmary at Carshalton, although an amendment to substitute the Brook Hospital was only lost by 20 votes to 15. In the circumstances we do not feel at all sure that the Park Hospital is the one best adapted for this purpose. The Park Hospital is one of the newest and most up-to-date fever hospitals, but, while very efficient for this purpose, does not appear to have adequate accommodation out of doors in the grounds for the convalescent and debilitated children who would make up a large part of its population. There is further the question of hardship to residents in the district who would have to be sent either to the Brook Hospital, Shooter's Hill, or to Joyce Green at Dartford, which would in some cases entail an unduly long journey. This very important matter has not received proper consideration.

Time-limit for Assistant Medical Officers.

Another matter to which we should like to draw attention is that of the time-limit for assistant medical officers, which has now been fixed at four years, with a maximum of ten years in the case of juniors promoted to be seniors. The reason for these limits is somewhat obscure. On the one hand, why keep an inefficient man four years, and on the other, why get rid of a good servant at any arbitrary period? The matter requires further elucidation; a fuller indication of the Board's reasons for the course pursued is desirable.

Medical Supplement.

The report ends with a medical supplement, including valuable and interesting papers and statistics. The assistant medical officer at Carshalton, Dr. F. W. W. Griffin, contributes a paper on the Treatment by Tuberculin at the Children's Infirmary, and says that "the majority of cases illustrated

well the value of tuberculin as a solvent of tuberculous tissues." Dr. J. D. Rolleston has a paper on Vincent's Angina, and Dr. E. W. Goodall records 3 cases of this, and 35 cases of a Fatal Variety of Ulcerative Sore Throat. Dr. F. M. Turner has a valuable paper on "return" cases.

In conclusion, we congratulate all concerned in the preparation of this annual report, which is a substantial record of well-organised and efficient activity.

BOARD OF AGRICULTURE AND FISHERIES: REPORT FOR THE YEAR 1909.

WE have received from the Secretary to the Board of Agriculture a report addressed to the President of that Board, which contains, *inter alia*, a valuable contribution to comparative pathology from the pen of Mr. S. Stockman, the chief veterinary officer.

The near relationship existing between certain of the most destructive maladies common to man and the lower animals is now generally recognised; and it is satisfactory to realise that the knowledge acquired by pathological study, whilst tending to the elucidation of the nature of certain human diseases, is now being utilised with ever-increasing success for the mitigation of those scourges which periodically infest our flocks and herds and which are known to depend on removeable causes.

Among diseases of this class tuberculosis occupies, for well-known reasons, a foremost place. In the course of the year 1909 a Statutory Order was prepared by the Board of Agriculture which, had its full operation been attained, would undoubtedly have afforded increased protection to the public health against the spread of tuberculosis by means of milk used for human food. As a result of the findings of the recent Royal Commission on Tuberculosis, the Board had become satisfied that this disease is unquestionably communicable from the cow to man. Considering this question in relation to animals, the fact of such communicability by means of the milk-supply appeared to the Board to have a material bearing on administrative policy. Any measure tending to diminish the number of tuberculous bovine animals in the country must obviously reduce the risk of the spread of tuberculosis among human beings; and the Board realised that if by any means infection could be eradicated from milch cows, a material step would have been achieved in the campaign against the disease in man. The Board accordingly decided that its first endeavours should be to secure the destruction of every cow suffering from tuberculosis of the udder and of every cow giving tuberculous milk, as well as of all bovine animals emaciated from tuberculosis, since these are known to disseminate the disease. Political exigencies, however, led to the withdrawal of this beneficent Order, as well as of Mr. John Burns's Bill on similar lines which was presented to the House of Commons in May, 1909. We trust, nevertheless, that the issuing of this Order has merely been postponed, and that effect thereto will be given at an early date.

Among other serious diseases for the most part common to the mammalia and transmissible from animals to man, Mr. Stockman gives interesting particulars concerning the prevalence of glanders, anthrax, and trichinosis.

Glanders.—In consequence of the very extensive prevalence of glanders among horses in London during 1908, stringent operations were set on foot for stamping out that disease, and with such success that in the following year an encouraging decrease was experienced in the numbers affected. During the year 1909 the number of outbreaks was 533, and that of animals attacked was 1753, the numbers in the previous year having been 789 and 2433 respectively. Mr. Stockman reports that glanders is not generally a very fatal disease, and the experience of past years is regarded by him as demonstrating the necessity of slaughtering diseased animals if this virulent disease is to be stamped out.

Anthrax.—The number of outbreaks of anthrax reported in the year under notice was 1317, this total including as well as cattle, 70 sheep, 310 swine, and 74 horses. In one infected farm more than half the cattle died from anthrax. In this, as in previous reported instances, the high death-rate appears to have resulted from carelessness in the disposal of the blood or of the carcase of the animal first attacked. In the year 1909 both the reported outbreaks and the animals attacked were considerably more numerous than in the previous year, but the totals represent only the cases reported as anthrax, not those confirmed as such after examination in the laboratory. From control experiments it is stated that at least one-third of the 720 outbreaks of anthrax reported locally during the year should be eliminated from the list on account of errors in diagnosis.

Trichinosis.—In the course of his remarks on trichinosis Mr. Stockman expresses the opinion that trichinosis of the pig is exceedingly uncommon, and he bases that opinion on the fewness of clinical cases of that disease which occur in human beings in this country. "So far as I am aware," he says, "there has been no outbreak of trichinosis sufficiently severe to attract attention in human beings in this country since 1871, when an outbreak occurred in Cumberland, and the pork which was the cause of it evidently contained a sufficient number of parasites to cause severe illness among the consumers." Experience tends to show that pigs in Great Britain, when they do become infected with this dangerous parasitic disease, owe the infection to the presence of infected rats. Among rats the disease is kept up, not only by embryos from the intestines contaminating their food, but also by the cannibalistic habits of these vermin. The following case occurring in Exeter during 1909 is interesting in this connexion. In February last the medical officer of St. Thomas forwarded to the Board a portion of salted pig's flesh for examination, saying that on microscopic examination he had found in it what he thought to be the Trichina spiralis, and that a labourer who had consumed the flesh had become very ill with what might turn out to be trichinosis. On examining the specimen it was found to be badly infested with Trichina spiralis. On visiting the farm one of the Board's veterinary inspectors found that the flesh had come from a sow which had been ailing for a fortnight, whereupon she was slaughtered, pickled, and used for food. Two people who had partaken of the flesh became seriously ill. The farm was overrun by rats, one of which was forwarded to the Board's laboratory for examination. The abdominal muscles of this rat contained a very large number of trichinæ. From this it seems highly probable that in the case reported the sow became infected through the agency of rats.

OPENING OF THE LONDON MEDICAL SCHOOLS.

WINTER SESSION 1910–11.

St. Bartholomew's Hospital.—The session will open on Oct. 3rd. In the evening the old students' dinner will be held in the great hall of the hospital at 6.30 for 7 o'clock. Mr. C. B. Lockwood will preside.

Charing Cross Hospital.—The session will be opened on Oct. 3rd, at 3.15 P.M., by the annual distribution of prizes to the students in the out-patients' hall at the hospital by Lady Juliet Duff, followed at 4.30 P.M. by the delivery of the Eighth Biennial Huxley Lecture, on the Hereditary Aspect of Nervous and Mental Diseases, by Dr. F. W. Mott. The dinner of the past and present students will take place on the evening of the same day.

St. George's Hospital.—The session will open on Oct. 1st. The prizes will be distributed, and the annual oration, "On Prizes," delivered, by Dr. S. Squire Sprigge, at 3 o'clock. At 4.15 the annual meeting of the St. George's Hospital Club will take place. The annual dinner will be held at Prince's Restaurant at 6.30 for 7 o'clock, when Mr. G. R. Turner, surgeon to the hospital, will preside. Applications for dinner tickets should be addressed to "The Dinner Secretaries, St. George's Hospital, London, S.W."

Guy's Hospital.—The session will open on Oct. 3rd.

King's College.—The session opens on Oct. 1st. The annual dinner of past and present students will be held on Oct. 3rd, at 6.30 for 7 P.M., at the Waldorf Hotel, Aldwych, W.C., when Dr. John Phillips will preside. Applications for tickets should be made to Dr. H. J. M. Playfair, 7, Upper Brook-street, W.

London Hospital.—The session will commence on Oct. 1st. The old students' dinner will be held on Oct. 3rd at the Hotel Cecil at 7.30 P.M., when the chair will be taken by Mr. Mark Hovell.

London (Royal Free Hospital) School of Medicine for Women.

—The inaugural address will be delivered by Dr. E. W. Roughton on Oct. 3rd at 4 P.M. The subject of the address will be "Woman's Sphere in Medicine."

Middlesex Hospital.—The session will open on Oct. 3rd at 3 P.M., when Mr. W. Salmon Nowell will give an introductory address, after which the prizes gained during the year will be distributed. The annual dinner of the past and present students will take place at the Trocadero on the same evening at 7 P.M., when Mr. Thomas H. Kellock will preside.

St. Mary's Hospital.—The session will commence on Oct. 3rd, when the prizes and awards for the past year will be presented by Sir A. Conan Doyle. The annual dinner of past and present students will be held on Oct. 3rd, when Mr. Ernest Lane will preside.

St. Thomas's Hospital.—The session will open with an old students' dinner, which will take place at the Hotel Cecil on Oct. 4th. Mr. W. F. Haslam will preside.

The London School of Tropical Medicine.—The inaugural address on the occasion of the opening of the winter session will be delivered by Professor H. A. Miers, under the presidency of Sir West Ridgeway, on Oct. 14th.

University College.—The session will be opened on Oct. 3rd, at 3 P.M., when the Dean's report on the progress of the school will be read, the medals and prizes distributed, and an introductory address delivered by the Dean of Salisbury. The chair will be taken by Sir Thomas Barlow, President of the Royal College of Physicians of London.

Victoria University of Manchester.—The session, which will be opened on Oct. 3rd, will be inaugurated by an address on "The Evolution of Surgery," by Professor William Thorburn.

Westminster Hospital.—The session will commence on Oct. 3rd, and the annual dinner will take place on Oct. 6th at Oddenino's Imperial Restaurant. The secretary of the dinner is Mr. J. M. G. Swainson, 9, Welbeck-street, W.

BRITISH MEDICAL BENEVOLENT FUND.

AT the August meeting of the committee 19 cases were considered and grants amounting to £190 made to 17 of the applicants. Appended is an abstract of the cases relieved:—

Widow, aged 72 years, of L.R.C.P. Edin. Has supported herself and an invalid daughter by letting lodgings since her husband's death 13 years ago; now finds that her rooms are often unoccupied and that she cannot work as hard as formerly. Voted £12.

M.R.C.S., aged 69 years. Is quite incapacitated and dependent on his wife, whose income is less than £1 a week; children unable to help. Voted £10.

Widow, aged 43 years, of L.R.C.P., L.R.C.S. Edin. Maintained herself for some years after husband's death by acting as matron at a school, but three years ago became permanently deaf and has since had to depend upon precarious earnings by needlework. Son, aged 15 years, has just been apprenticed to the merchant service. Voted £12.

Daughter, aged 59 years, of L.R.C.S.Irel. Was a teacher for many years, but is now unable to obtain pupils, and having no means is dependent on a sister whose only income is derived from two annuities of £20. Relieved once, £12. Voted £12.

Widow, aged 52 years, of L.R.C.P., L.R.C.S. Edin. Quite unprovided for at sudden death of husband about five years ago, and dependent on small uncertain earnings by needlework and slight help from a brother-in-law. Two children, aged 19 and 15 years, the elder at a training college for teachers. Relieved five times, £52. Voted £10.

L.R.C.P. Edin., aged 65 years. Has been quite incapacitated for more than a year past, and is, with his wife and an invalid daughter, dependent on a brother, who pays for their rooms and allows them a few shillings a week. Relieved once, £18. Voted £18.

Daughter, aged 67 years, of late L.S.A. No income and physically unable to undertake continuous work. Relieved three times, £30. Voted £10.

Widow, aged 52 years, of L.R.C.P. Irel. Since husband's death eight or nine years ago has supported herself as a nurse, but has recently had three serious illnesses and is consequently out of work. Relieved once, £5. Voted £10.

L.R.C.P., L.R.C.S. Edin., a medical woman, aged 35 years. For the last four years has been a constant sufferer from colitis and quite unable to earn a living. Relieved once, £18. Voted £18.

Daughter, aged 62 years, of late M.R.C.S. No income, and dependent on friends and small earnings by needlework. Relieved four times, £48. Voted £12.

Widow, aged 40 years, of M.B., C.M. Aberd. Endeavours to support herself by letting rooms, but at present has no lodgers. Two children, aged 12 and 10. Relieved three times, £22. Voted £12.

Daughter, aged 64 years, of late L.S.A. Only income an annuity of £20, and is in delicate health. Relieved 12 times, £116. Voted £12.

Widow, aged 55 years, of L.R.C.P. Edin. No income and dependent on two sons, whose earnings are small. Relieved three times, £30. Voted £10.

Daughter, aged 61 years, of late M.R.C.S. Used to maintain herself as a dispenser, but can no longer obtain work as such, and is dependent on uncertain earnings from wood-carving and slight help from a sister who has to earn a living. Relieved four times, £40. Voted £10.

Widow, aged 53 years, of L.R.C.P.Irel. Quite unprovided for at husband's death a few years ago, and health does not permit of anything but light work. Is at present acting as caretaker, but receives neither salary nor food. Relieved three times, £36. Voted £12.

Widow, aged 80 years, of M.R.C.S. Has a small income, but applies for a little help owing to the infirmities of her children, three of whom are deaf and dumb and one epileptic. Relieved eight times, £55. Voted £5.

Widow, aged 60 years, of late M.D. Edin. Has a situation as companion, but only receives a small salary and has to help a delicate daughter. Relieved once, £5. Voted £5.

Contributions may be sent to the honorary treasurer, Dr. S. West, 15, Wimpole-street, London, W.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Sept. 1st, 1832.

MODE OF EMPLOYING FRICTION.—When my wife faints, which is miserably often, I do not apply friction in the usual absurd way,—rubbing backwards and forwards, which must alternately check and accelerate the passage of the blood,—but taking hold of one of her hands with my left-hand, I place the thumb and finger of my right hand tight round her wrist, and then pass them firmly up towards her elbow. Having brought them back loosely to the wrist, I pass them firmly up again, and when I have repeated the operation two or three times, *sometimes* on both arms, I have the pleasure of hearing the ejaculation, "I feel better now." When I first had recourse to this means of resuscitating my lady, she exclaimed *instinctively* on two different occasions, without being at all aware that I had had any particular intention, "Oh! that is what I seem to want." From the invariable and immediate effect of this mode of friction, I flatter myself that it is not unworthy the notice of the medical practitioner in the friction of cholera patients, a process which should be much oftener resorted to, and more energetically persisted in, than it generally is.—N. G. (*Extract from a letter to the Editor.*)

Public Health.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The City of Birmingham.—In many ways we seem to be approaching what is almost a farce in the matter of the official estimates of population, and we imagine that the authorities of Somerset House would be the first to acknowledge this fact. But under any circumstances we shall be put out of the absurd position we are now in when the enumeration of the people in 1911 takes place. We must live in the hope that the anomalies which this census will reveal will lead to there being quinquennial numberings in the future. The City of Birmingham had in 1909, according to the Registrar-General's methods, a population of 363,629, but according to the medical officer of health, who can and does take into account the number of inhabited houses, this estimate is from 35,000 to 40,000 in excess of the facts, and, if this be so, the death-rate, instead of being 15·5 per 1000 according to the Registrar-General's estimate, is 16·5 per 1000. But when in 1911 the census is taken the population of Birmingham may, owing to extension of the city's limits, reach a figure far in excess of the estimates of either the Registrar-General or the medical officer of health, and the death-rate, in consequence of the inclusion of relatively rural areas, may be found to be much lower than 15·5 per 1000, the position of Birmingham amongst the larger towns being also thereby greatly altered. And we may thus have an additional illustration, if one was needed, of the absurdity of comparing the death-rates of different towns without some regard to the "urban" and "rural" aspects of the several communities. The infantile mortality of Birmingham for the year 1909 was, as in England and Wales as a whole, the lowest on record—135 per 1000 births—the mortality in the several wards ranging from 94 to 211. Administration as regards infantile mortality is under the superintendence of Dr. Jessie G. Duncan, who personally visits each child whose birth is notified. After this first visit the care of the children is handed over to one of the health visitors, who visit once a week until the child is 5 weeks old, when monthly visits are made up to the

end of the first year. If the progress of the child becomes unsatisfactory Dr. Duncan resumes sole charge of it. In addition to these visits "infant consultations" are held twice a week in convenient localities, and they are being patronised to a very encouraging extent. With reference to the much-debated subject of the influence of alcoholism in the parents upon the condition of the offspring, Dr. Duncan states that "alcoholism in the mother has a marked effect on the weight of the child. The children of such women are in all cases puny and weak and much below average weight."

Dr. John Robertson, the medical officer of health, in dealing with the subject of vaccination, reports that many instances of worthless vaccination by medical men have been seen in Birmingham—"cases in which vesiculation is little larger than a pin's head in one or two places." The fault, he says, "lies largely with the general public who crowd to the doctor who will stoop to do what is obviously a fraud on the public at large—inefficient vaccination." This is a statement which, although strong, has, we are afraid, a wide application, with the result that the public vaccinator is placed in a very invidious position in having to make four separate insertions of lymph. In face of the well-known statistics relating to the value of multiple insertions and a large scar area, it is difficult to understand how medical men can agree to perform one-place vaccination. It is practically equivalent to consenting to prescribe a dose of medicine much below the official scale, although the medical man may be well aware that the small dose is relatively valueless. With the object of diminishing as far as possible loss of school attendance through the occurrence of measles, it has been arranged in Birmingham that when a case of this disease occurs in the home of a child attending school those children who have already suffered from this malady shall not be excluded from school, only susceptible contacts being excluded. Dr. Robertson furnishes the yearly notifications of diphtheria in Birmingham since 1893, and he makes the comment that there are no signs of any permanent decline in the prevalence of the disease during the period of compulsory notification. But the figures show that during the last five years there has been a diminution in the case mortality of the disease, a fact which is no doubt largely due to the use of antitoxin. The case mortality from diphtheria in the isolation hospitals during 1909 was 10·9 per cent., as against one of 14·6 per cent. at home. There were 381 doses of antitoxin supplied by the corporation in 1909.

In the Birmingham Sanatorium, which was erected near Cheltenham in 1908, there was during 1909 some shortage of water on the site, and consequently not all the beds were in use, but between Nov. 1st, 1908, and Dec. 31st, 1909, there were 76 cases admitted out of no fewer than 317 applicants for admission, a fact which should have resulted in the admission of eminently suitable cases at favourable ages and good social conditions. It seems that 67 per cent. of the male patients were between 20 and 34 years of age and 66 per cent. of the female patients between the ages of 15 and 24. The average length of stay was nearly four months. There were 48 cases discharged, and of these several lost all expectoration, and in several others the sputum was apparently free from tubercle bacilli. Weight was gained in practically every instance. There are, of course, as yet no after-results of much permanent value, but as in each succeeding January the condition of the patients discharged in 1909 is recorded we shall obtain some clear conception as to the value of the work of this institution. As Dr. Paul Mathews, medical superintendent of the sanatorium, remarks in his report, "It is evident that the treatment of consumptive patients does not end with their discharge from the sanatorium," and he adds that some of the discharged patients have found it difficult or impossible to obtain regular or even casual employment though physically fit to undertake it. This is very regrettable.

Excellent work is being done by Birmingham in the direction of securing a non-tuberculous milk-supply for the city, and offers of assistance are made to every farmer supplying milk to Birmingham whose farm buildings are situated within 10 miles of the city, provided always that the cowsheds are considered suitable for the purposes to which they are put. In the above circumstances the corporation supply tuberculin and veterinary assistance for testing the cows twice annually, the farmer in his turn undertaking to separate the diseased from the healthy cows, wasters and cows with tuberculosis of the udder to be dried off and sold for slaughter. An official certificate is issued quarterly to those farmers who keep their herds free from tuberculosis, and a list of farms at which the cattle are being kept thus free is supplied to any person in the city who desires to have it. Twenty farmers applied to have their cattle tested, but four of these applications were refused on the ground that the cowsheds were not suitable. In the remaining 16 there were 803 cows tested, and of these 567 were regarded as free from tuberculosis, while 209 gave a definite reaction and 27 were regarded as doubtful. The percentage of reactions or doubtful reactions was 29·3. The fees paid for testing amount to about 5*s.* per cow. During 1909 there were 531 samples of milk examined bacteriologically for tubercle bacilli and 7 per cent. were found tuberculous. Doubtless other tests besides the purely bacteriological were carried out, and these tests were verified by inoculation experiments. The whole arrangement appears to us to be well calculated to effect its object. In the appendix to the volume under review Dr. Robertson embodies his report upon the relation of infantile mortality to the industrial employment of married women, a report which was issued separately some months ago.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 77 of the largest English towns 8346 births and 3724 deaths were registered during the week ending August 20th. The annual rate of mortality in these towns, which had been equal to 10·7 and 11·1 per 1000 in the two preceding weeks, further rose to 11·5 in the week under notice. During the first seven weeks of the current quarter the annual death-rate in these towns averaged only 11·2 per 1000, and in London during the same period the death-rate, calculated on the probably over-estimated population, did not exceed 10·4 per 1000. The lowest reported annual rates of mortality during the week in these 77 towns were 2·1 in Hornsey, 4·0 in Rochdale, 5·7 in Willesden, and 5·9 in Walthamstow; the rates in the rest of the 77 towns ranged upwards to 19·2 in Bootle, 19·7 in Sunderland, and 20·1 in Preston. In London the reported death-rate in the week under notice was again so low as 10·2 per 1000. The 3724 deaths from all causes during the week in the 77 towns showed a further increase of 121 upon the low numbers in recent weeks (almost exclusively due to the greater fatality of infantile diarrhœa), and included 498 which were referred to the principal epidemic diseases, against 347 and 434 in the two preceding weeks; of these 498 deaths, 304 resulted from diarrhœa, 67 from whooping-cough, 65 from measles, 36 from diphtheria, 18 from scarlet fever, and 8 from enteric fever, but not 1 from small-pox. The mean annual rate of mortality from these epidemic diseases in the 77 towns in the week under notice was equal to 1·5 per 1000, against 1·1 and 1·3 in the two preceding weeks. No death from any of these epidemic diseases was registered during the week in Cardiff, Croydon, Walthamstow, Leyton, Halifax, or in ten other smaller towns; the annual death-rates therefrom ranged upwards, however, to 5·7 in Preston, 6·1 in Dewsbury, 7·3 in Burnley, and 7·4 in Bootle. The deaths attributed to diarrhœa in the 77 towns, which had been 115 and 192 in the two preceding weeks, further rose in the week under notice to 304; the highest annual death-rates from this cause during the week were 4·1 in Hull, 4·3 in St. Helens, 4·8 in Preston, 5·8 in Burnley, and 7·4 in Bootle. The 67 fatal cases of whooping-cough showed a further decline from the numbers in recent weeks, the highest recorded rates from this disease during the week under notice being 1·1 in Northampton, 1·2 in Gateshead, and 1·4 in Wallasey. The deaths from measles, which had been 87 and 95 in the two previous weeks, declined during the week to 65; they caused, however, rates equal to 1·2 in Brighton, 1·8 in Tynemouth, and 4·1 in Barrow-in-Furness. The 36 deaths referred to diphtheria somewhat exceeded the numbers in recent weeks; they included 8 in London and its suburban districts, 5 in Stoke-on-Trent, and 2 each in Portsmouth, Liverpool, and Swansea. The 18 fatal cases of scarlet fever were fewer than in any previous week of this year, and included 4 in London, 4 in Liverpool, and 2 both in Portsmouth and in Bury. Only 8 deaths from enteric fever were registered during the week in the 77 towns. The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had been

1569, 1523, and 1490 in the three preceding weeks, had further decined to 1423 at the end of the week under notice; 143 new cases of this disease were admitted to these hospitals during the week. The 952 deaths from all causes in London during the week under notice included 110 which were referred to pneumonia and other diseases of the respiratory system, showing a further decline from the numbers in recent weeks, and were 16 below the corrected average number in the corresponding week of the five years 1905–09. The causes of 33, or 0 9 per cent., of the deaths registered during the week in the 77 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during the week were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Salford, and in 51 other smaller towns; the 33 uncertified causes of death in the 77 towns included 4 in London, 4 in Liverpool, 3 in Birmingham, and 3 in Sunderland.

In 77 of the largest English towns 8116 births and 3930 deaths were registered during the week ending August 27th. The annual rate of mortality in these towns, which had increased from 10·7 to 11·5 per 1000 during the three preceding weeks, further rose to 12·1 in the week under notice. During the first eight weeks of the current quarter the annual death-rate in these towns averaged only 11·3 per 1000, and in London during the same period the death-rate, calculated on the probably over-estimated population, did not exceed 10·5 per 1000. The lowest reported annual rates of mortality during last week in these 77 towns were 3·7 in Hornsey, 5·1 in Walthamstow and in Dewsbury, and 5·5 in Leyton; the rates in the rest of the towns ranged upwards to 19·3 in Huddersfield, 19·4 in Liverpool, 20·5 in Middlesbrough, and 20·7 in Hull. In London the reported death-rate last week did not exceed 10·8 per 1000. The 3930 deaths registered last week in the 77 towns showed an increase of 206 upon the low number in the previous week, and included 720 which were referred to the principal epidemic diseases, against 434 and 498 in the two preceding weeks; of these 720 deaths, 516 resulted from diarrhœa, 77 from measles, 65 from whooping-cough, 33 from diphtheria, 22 from scarlet fever, and 7 from enteric fever, but not one from scarlet fever. The mean annual rate of mortality from these epidemic diseases in the 77 towns last week was equal to 2·2 per 1000, against 1·3 and 1·5 in the two preceding weeks. No death from any of these epidemic diseases was registered last week in Willesden, Tottenham, Norwich, Swansea, Rochdale, or in nine other smaller towns; the annual death-rates therefrom ranged upwards, however, to 6·0 in Birkenhead, 7·0 in Preston, 8·6 in Hull, and 8·8 in Middlesbrough. The deaths attributed to diarrhœa in the 77 towns, which had been 115, 192, and 304 in the three preceding weeks, further rose last week to 516; the highest annual rates from this cause during the week were 5·2 in Bootle, 5·8 in Burnley, 6·0 in Birkenhead, 6·6 in Preston, 8·2 in Hull, and 8·8 in Middlesbrough. The 77 fatal cases of measles showed a slight increase upon the number in the preceding week, and caused the highest annual rates of 1·1 in Oldham and in Rhondda, 1·8 in Tynemouth, and 2·5 in Barrow-in-Furness. The 65 deaths from whooping-cough showed a slight decrease upon the numbers in the two preceding weeks, and caused the highest annual rates of 1·1 in Huddersfield and in Sheffield and 1·6 in Northampton. The 33 deaths from diphtheria showed a decline of 3 from the number in the previous week, and included 10 in London, 3 in Stoke-on-Trent, and 2 both in Croydon and in Portsmouth. The 22 fatal cases of scarlet fever showed an increase of 4 upon the exceedingly low number in the previous week, and included 5 in Liverpool and 3 both in London and in Birmingham. The 7 deaths from enteric fever was the lowest number recorded in any week of the current year. The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had continuously declined from 1563 to 1423 in the four preceding weeks, rose to 1447 on Saturday last; 159 new cases of this disease were admitted to these hospitals during last week, against 165, 163, and 143 in the three preceding weeks. No case of small-pox was under treatment in the Metropolitan Asylums at the end of the week. The 1009 deaths registered in London last week included 129 which were referred to pneumonia and other diseases of the respiratory system, showing an increase of 8 upon the number in the previous week, and were 11 above the corrected average number in the corresponding week of the five years 1905–09. The causes of 28, or 0·7 per cent., of the deaths registered during the week in the 77 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during the week were duly certified in Sheffield, Bristol, West Ham, Bradford, Newcastle-upon-Tyne, Hull, and in 56 other smaller towns; the 28 uncertified causes of death in the 77 towns included 7 in Liverpool, 4 in Birmingham, 3 in Stoke-on-Trent, and 2 both in Manchester and Blackburn.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 826 births and 481 deaths were registered during the week ending August 20th. The annual rate of mortality in these towns, which had been equal to 12·3 and 12·7 per 1000 in the two preceding weeks, further rose to 13·3 in the week under notice. During the first seven weeks of the current quarter the death-rate in these towns averaged 12·5 per 1000, and exceeded by 1·3 the mean rate during the same period in the 77 largest English towns. The annual death-rates in the week under notice in these eight Scotch towns ranged from 6·0 and 10·1 in Leith and Aberdeen, to 14·9 in Edinburgh and 16·3 in Greenock. The 481 deaths from all causes in the eight towns in the week showed a further increase of 21 upon the numbers in the two preceding weeks, and included 73 which were referred to the principal epidemic diseases, against 44 and 58 in the two preceding weeks; of these 73 deaths, 50 resulted from diarrhœa, 8 from scarlet fever, 7 from whooping-cough, 6 from diphtheria, and 2 from measles, but not one either from "fever" or from small-pox. The mean annual rate of mortality from these epidemic diseases in the eight towns during the week under notice was equal to 2·0 per 1000, against 1·5 from the same diseases in the 77 English towns. The deaths in the eight towns attributed to diarrhœa, which had been 20, 26, and 35 in the three preceding weeks, further rose in the week under notice to 50, of which 32 occurred in Glasgow, 6 in Paisley, 4 in Dundee, 3 in Edinburgh, and 2 both in Aberdeen and in Greenock. The 8 fatal cases of scarlet fever showed an increase upon recent weekly numbers, and included 3 in Edinburgh and 2 in Glasgow. The deaths from whooping-cough, which had been 4 and 9 in the two preceding weeks declined again during the week to 7, of which 4 were returned in Glasgow and 2 in Greenock. The 6 deaths referred to diphtheria, including 3 in Glasgow, exceeded by 2 the number in the previous week. The 2 fatal cases of measles were fewer than in any recent week. The deaths referred to diseases of the respiratory system in the eight towns, which had been 61, 59, and 47 in the three preceding weeks, further declined to 39 in the week under notice, and corresponded with the number in the same week of last year. The causes of 16, or 3 3 per cent., of the deaths in the eight towns in the week under notice were not certified or not stated; in the 77 English towns the proportion of uncertified causes of death did not exceed 0·9 per cent.

In eight of the principal Scotch towns 753 births and 492 deaths were registered during the week ending August 27th. The annual rate of mortality in these towns, which had been equal to 12·7 and 13·3 per 1000 in the two preceding weeks, further rose to 13·6 in the week under notice. During the first eight weeks of the current quarter the death-rate in these towns averaged 12·9 per 1000, and exceeded by 1·6 the mean rate during the same period in the 77 largest English towns. The annual death-rates last week in these eight Scotch towns ranged from 9·7 in Edinburgh and 11·0 in Aberdeen to 17 5 in Dundee and 17·7 in Greenock. The 492 deaths from all causes in the eight towns last week showed an increase of 11 upon the number in the previous week, and included 83 which were referred to the principal epidemic diseases, against 44, 58, and 73 in the three preceding weeks; of these 83 deaths, 63 resulted from diarrhœa, 8 from whooping-cough, 6 from diphtheria, 4 from scarlet fever, and 2 from "fever," but not one from small-pox or from measles. The mean annual rate of mortality from these epidemic diseases in the eight towns last week was equal to 2·3 per 1000, against 2·2 from the same diseases in the 77 English towns. The deaths in the eight towns attributed to diarrhœa, which had increased from 20 to 50 during the four preceding weeks, further rose to 63 last week, of which 43 occurred in

Glasgow, 5 in Paisley, and 4 both in Dundee and in Greenock. Of the 8 fatal cases of whooping-cough, 3 were returned in Glasgow, 3 in Greenock, and 2 in Dundee. Three of the 4 deaths from scarlet fever were registered in Glasgow and 1 in Edinburgh. One fatal case of "fever" was recorded in Dundee and 1 in Perth. The deaths referred to diseases of the respiratory system in the eight towns, which had been 47 and 39 in the two preceding weeks, rose to 49 last week and were 4 in excess of the number recorded in the corresponding week of last year. The causes of 12 or 2·4 per cent. of the deaths in the eight towns last week were not certified or not stated; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent.

HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,151,799 persons, 601 births and 361 deaths were registered during the week ending August 20th. The mean annual rate of mortality in these towns, which had been equal to 15·3 and 15·7 per 1000 in the two preceding weeks, further rose to 16·3 in the week under notice. During the first seven weeks of the current quarter the annual death-rate in these Irish towns averaged 16·1 per 1000; the mean rate during the same period did not exceed 11·2 in the 77 largest English towns and 12·5 in the eight principal Scotch towns. The annual death-rate during the week was equal to 15·8 in Dublin, 16·5 in Belfast, 15·1 in Cork, 14·4 in Londonderry, 9·6 in Limerick, and 17·5 in Waterford; the mean annual death-rate in the 16 smallest of these Irish towns in the week under notice was equal to 20·1 per 1000. The 361 deaths from all causes in the 22 town districts during the week showed a further increase of 15 upon the numbers in the two preceding weeks, and included 53 which were referred to the principal epidemic diseases, against 35 and 46 in the two previous weeks; these 53 deaths were equal to an annual rate of 2·4 per 1000; the rate during the week under notice from the same diseases did not exceed 1·5 per 1000 in the 77 English towns and 2·0 in the eight Scotch towns. The 53 deaths from these epidemic diseases in the Irish towns included 34 from diarrhœa, 8 from measles, 4 from whooping-cough, 3 from diphtheria, 3 from enteric fever, and 1 from scarlet fever; but not one from small-pox. The deaths attributed to diarrhœa in the 22 towns, which had been 9, 16, and 34 in the three preceding weeks, were again 34 in the week under notice, and included 6 in Dublin, 22 in Belfast, 3 in Waterford, and 2 in Londonderry. Seven of the 8 fatal cases of measles occurred in Belfast. In Dublin were recorded 2 deaths from diphtheria and 2 from whooping-cough. Of the 3 deaths referred to enteric fever, 2 also occurred in Dublin and 1 in Cork. The deaths in the 22 towns in the week under notice included 42 which were referred to pneumonia and other diseases of the respiratory system, against 59, 44, and 39 in the three preceding weeks. The causes of 12, or 3·3 per cent., of the deaths registered in the Irish towns during the week were not certified; in the 77 English towns the proportion of uncertified causes of death in the week under notice did not exceed 0·9 per cent., while in the eight Scotch towns it corresponded with that in the Irish towns.

In 22 town districts of Ireland, having an estimated population of 1,151,790 persons, 530 births and 377 deaths were registered during the week ending August 27th. The mean annual rate of mortality in these towns, which had increased from 15·3 to 16·3 per 1000 during the three preceding weeks, further rose to 17·1 in the week under notice. During the first eight weeks of the current quarter the annual death-rate in these Irish towns averaged 16·2 per 1000; the mean rate during the same period did not exceed 11·3 in the 77 largest English towns and 12·9 in the eight principal Scotch towns. The annual death-rate during last week was equal to 17·9 in Dublin, 17·5 in Belfast, 17·8 in Cork, 10·8 in Londonderry, 20·5 in Limerick, and 19·5 in Waterford; the mean annual death-rate last week in the 16 smallest of these Irish towns was equal to 14·8 per 1000. The 377 deaths from all causes in the 22 town districts last week showed an increase of 16 upon the low number returned in the previous week, and included 74 which were referred to the principal epidemic diseases, against 46 and 53 in the two previous weeks; these 74 deaths were equal to an annual rate of 3·4 per 1000; the rate last week from the same diseases did not exceed 2·2 per 1000 in the 77 English towns, and 2·3 in the eight Scotch towns. The 74 deaths from these epidemic diseases in the Irish towns last week included 54 from diarrhœa, 6 from measles, 6 from diphtheria, 6 from whooping-cough, and 2 from scarlet fever, but not one from small-pox or from enteric fever. The deaths attributed to diarrhœa in the 22 towns, which had increased from 9 to 34 during the four previous weeks, further rose to 54 last week, of which 29 occurred in Belfast and 17 in Dublin. Three of the fatal cases of measles and 5 of whooping-cough were recorded in Belfast. Four of the 6 deaths from diphtheria and the 2 fatal cases of scarlet fever were registered in Dublin. The deaths in the 22 towns last week included 50 which were referred to pneumonia and other diseases of the respiratory system, against 39 and 42 in the two preceding weeks. The causes of 12, or 3·2 per cent. of the deaths registered last week in the Irish towns were not certified; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent., while it was equal to 2·4 per cent. in the eight Scotch towns.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Fleet-Surgeon Richard Francis Bate has been placed on the Retired List at his own request.

The following appointments are notified:—Fleet-Surgeons: C. S. Facey to the *Commonwealth*; W. W. Pryn to the *Victory*, additional, for temporary service at Haslar Hospital; H. C. Arathoon to the *Formidable*. Staff-Surgeons: J. Stoddart and H. C. Adams to the *Gibraltar*, for voyage out, and to the *Challenger* and *Prometheus* respectively, on recommissioning; M. J. Smith to the *Gibraltar*, for charge on voyage home; C. R. Sheward to the *Pathfinder*; L. S. Whitwam to the *Encounter*; and T. B. Shaw to Haslar Hospital, to assist in instruction of surgeons on entry; C. C. Macmillan, D.S.O., to the *Naiad*, on commissioning; S. Croneen to the *Talbot*, temporarily; C. K. Bushe to the *Vivid*, additional, for disposal. Surgeons: T. C. Patterson to the *Gibraltar*, for voyage out, and to the *Challenger*, on recommissioning; K. D. Bell to the *Niobe*, on recommissioning; C. H. Dawe to the *Victory*, additional, for disposal; J. H. McDowall to the *Dido*, on reducing; W. C. Carson to the *Victory*, additional, for disposal.

ROYAL ARMY MEDICAL CORPS.

Surgeon-General J. G. MacNeece has embarked for service in India. Colonel T. J. O'Donnell, D.S.O., from Quetta, has been appointed Principal Medical Officer of the Karachi Brigade. Lieutenant-Colonel J. J. C. Donnet, in charge of the Military Hospital at Belfast, has been selected for increased pay under Article 317 of the Royal Warrant. An exchange on the roster for service abroad has been approved between Lieutenant-Colonel G. E. Hale, D.S.O., and Lieutenant-Colonel R. R. H. Moore. Lieutenant-Colonel G. E. Faunce has arrived home on leave from Gibraltar. Major E. M. Pilcher, D.S.O., from Singapore, has been appointed Professor of Military Surgery at the Royal Army Medical College, Grosvenor-road, vice Major C. G. Spencer, whose tenure of that appointment has expired. An exchange on the roster for service abroad has been sanctioned between Major C. M. Fleury and Major S. H. Fairie. Major H. L. W. Norrington has been placed under orders to proceed to Malta during the coming trooping season. Major H. J. M. Buist, D.S.O., has embarked for South Africa. Captain G. H. Stevenson has been appointed a Specialist in Dermatology and Venereal Diseases to the 7th (Meerut) Division, India. Major C. E. P. Fowler has arrived home on leave from Gibraltar, Captain A. W. Gater, from Jullundur, has been posted for duty at Clifden. Captain W. G. Maydon has been transferred from Bangalore to Secunderabad. Captain T. Scatchard, from Agra, has taken up duty at Kailana. Captain M. Keane has been posted to Landour from Muttra. Captain C. F. White has been transferred from Shwebo, Burma, to Rangoon. Captain W. R. Galwey, from Ferozopore, has joined at Dalhousie. Captain F. Forrest has been transferred from Kasauli to Ambala. Captain A. Chopping has arrived home on leave from India. The following Lieutenants, on termination of their course of probationary instruction at the Royal Army Medical Corps Depôt at Aldershot, have been posted as follows:—W. H. O'Riordan to the

Northern Command; C. T. V. Benson and W. P. MacArthur to the Aldershot Command; E. M. Parsons-Smith and L. C. Hayes to the London District; J. Gilmore to the Southern Command; C. Robb to the Irish Command; and E. T. Gaunt to the Eastern Command. Lieutenant A. H. T. Davis has been transferred from Bangalore to Secunderabad. Lieutenant S. S. Dykes, from Edinburgh, has been posted to Barry Camp.

Captain Ralph Koper White, from the Indian Medical Service, to be Captain, vice Arthur A. McNeight, who exchanges.

The undermentioned to be Lieutenants, on probation:—John Darling Bowie, Charles Henry Hasler Harold, John Kennedy Gaunt, Guy Oldham Chambers, Hugh Glencairn Monteith, Eric Leigh Fyffe, Robert Francis Bridges, Charles Herbert Stringer, Leslie Ferguson Kennedy Way, and Thomas John Hallinan. Lieutenant (on probation) Hugh G. Monteith is seconded, under the provisions of Article 300, Royal Warrant for Pay and Promotion, 1909.

INDIAN MEDICAL SERVICE.

Colonel W. A. Corkery, principal medical officer of the Karachi Brigade, has been appointed Principal Medical Officer of the 3rd (Lahore) Division, vice Colonel H. J. Waller-Barrow, R.A.M.C., who has been placed on retired pay. Colonel H. St. Clair Carruthers has been confirmed in his appointment as Inspector-General of Civil Hospitals in Burma. Lieutenant-Colonel A. L. Duke has been appointed to officiate as an Agency Surgeon of the First Class and has been posted as Administrative Medical Officer of the North-West Frontier Province. Lieutenant-Colonel J. Chaytor-White, Bombay, has arrived home on leave. Major A. Hooton represented the Indian Medical Service at the recent Conference on Tropical Medicine at Manila. Major P. Carr White, Madras Presidency, has been appointed Agency Surgeon to the Kotah and Jhalawar States. Major J. Bamfield has been reverted from civil to military employment. Major T. E. Watson has been granted leave from India until Dec. 2nd, 1911. Major C. E. Williams, Sanitary Commissioner of Burma, has been granted 15 months privilege leave combined with furlough from India. Major W. M. Anderson has arrived home on leave from India. Captain G. C. L. Kerans has been appointed a specialist in Ophthalmology to the 8th (Lucknow) Division. Captain T. H. Gloster has been granted an extension of his furlough for six months. Captain E. J. C. MacDonald, district plague medical officer at Sialkot, has been granted three months' privilege leave. Captain G. M. Millar has had his leave extended by six months on medical certificate. Captain J. Christopher has been selected for appointment as Assistant to the Director of the Central Research Institute of India (Colonel D. Semple, R.A.M.C.) Captain H. W. Pierpont has joined the Central Provinces and has been appointed Civil Surgeon of Chanda. The services of Captain D. C. V. Fitzgerald have been placed by the Government of India at the disposal of the Commander-in-Chief. Captain Kanwar Shamsher Singh has been appointed District Plague Medical Officer of Karnal District, vice Captain A. L. Lauddie.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned Lieutenants are confirmed in that rank:—Alexander C. McKillop, John Inkster, Gordon R. Ward, Aston R. Dale, Mark Anthony, Ronald Mackinnon, Stephen Gordon, George E. Shand, Sidney J. Stewart, George B. McCaul, George F. Randall, and Edward T. Holland.

TERRITORIAL FORCE.

Royal Army Medical Corps.

2nd London Sanitary Company: Captain Walter F. Corfield resigns his commission.

Attached to Units other than Medical Units.—Lieutenant Howard Henry to be Captain. Captain James Wilson to be Major.

For attachment to Units other than Medical Units.—Hugh Selwyn Gaskell to be Lieutenant. Percival Thomas Rutherford to be Lieutenant.

FLORENCE NIGHTINGALE.

The funeral of Miss Nightingale took place on August 20th at East Wellow, Hampshire. The coffin was conveyed from her London residence in South-street, Park-lane, to Waterloo Station, where it was received by a bearer party selected from the Grenadier, Coldstream, and Scots Guards. It was then taken by train to Romsey, where it was placed in a hearse and conveyed to East Wellow. A memorial service was held in St. Paul's Cathedral in presence of a large congregation. The King was represented by Major-General J. S. Ewart, the Queen by Lord Wenlock, Queen Alexandra by Colonel H. Streatfeild, the Duke of Connaught by Captain T. R. Bulkeley, and Princess Christian by Major J. E. B. Martin. Surgeon-General W. L. Gubbins, the Director-General of the Army Medical Service, was present. There was a large attendance of nurses. Regiments which served in the Crimea were represented, and a number of pensioners from the Royal Hospital, Chelsea, survivors of that war, also attended the service.

Inspector-General of Hospitals and Fleets James W. Fisher has been awarded a Greenwich Hospital pension of £100 per annum in succession to the late Deputy Inspector-General G. Jackson. Inspector-General Fisher entered the service in January, 1868, became inspector-general of hospitals and fleets in March, 1898, and retired in February, 1904. As surgeon of the *Decoy* he was attached to the naval brigade during the Ashanti War, 1873–74, and was specially mentioned and promoted for his services under fire at the battle of Amoaful. During the epidemic of yellow fever at Jamaica in 1897 he was in medical charge of the Royal Naval Hospital at Port Royal.

Correspondence.

"Audi alteram partem."

POOR-LAW REFORM FROM A GENERAL PRACTITIONER'S POINT OF VIEW.

To the Editor of THE LANCET.

SIR,—Quite recently the columns of THE LANCET have furnished the general practitioner food for reflection on the above subject. Most of us are conscious that great changes in the Poor-law system are imminent. All minds, lay and medical, are made up on this point. But the view we take of such changes is of necessity, but not selfishly, different when we look at it from the perspective of the British lay public and the general medical practitioner. Of those changes the most sweeping, drastic, and revolutionary are recommended in the Minority Report, and owing to our political system and the desire of both political parties to make capital out of this question this report is the one which seems to hold the field. I am not finding fault with this. Neither am I opposed to any alteration in the present Poor-laws; on the contrary, I hold strongly democratic views as to the imperative urgency of the reform of a system which is not remarkable for its humanising influence, outside its purely medical aspect, on the poor and destitute. What imperfect criticisms I make, or objections I put forward, are from the point of view of a general practitioner who has had 20 years' experience of working-class practices. The poor and the destitute have on this question powerful friends and advocates amongst the leaders of both the Conservative and Liberal parties.

Dr Major Greenwood has lately stated that the adoption of the medical proposals contained in either the Majority or Minority Reports would mean ruin to a very large number of medical men whose sole income and means of livelihood are derived from work in poor and working-class districts. I think this statement merits most serious attention, coming as it does from one who knows so much of such work, and who is certainly in a better position, in his dual capacity as a part-time Poor-law medical officer and general practitioner, to speak for the class of practitioners so affected than others who have lately written on the subject in THE LANCET. Indeed, I think Dr. Greenwood speaks with special authority and as one who seems almost alone in his militant advocacy of the claims of the general practitioners for just consideration of their case. What is more, many of us feel that his views will turn out to be truly prophetic.

Quite lately, in THE LANCET, we find Dr. J. C. McVail uttering weighty words which deserve consideration from general practitioners. His plea for the provident dispensary system is certainly logical, and if his suggestions were carried out in full, and a fair contributory basis insisted upon, a solution not exactly disastrous to us might be arrived at. But there

is here a great difficulty. In London, at least, most of the provident dispensaries seem in the hands of a coterie of medical men in each district, and are exclusively, and not a little selfishly, worked. Dr. McVail should study the working of the Battersea Provident Dispensary, the largest one in London, as an example of the present method of administration of such institutions. This dispensary is in the hands of about a dozen medical men, and I do not think it is saying too much to assert that this dispensary has proved disastrous to other medical men practising in the district. In order to make a provident dispensary at all acceptable to the general medical practitioner the contributions will have to be materially increased above the present rate, and the door must be left open for the entry, in each locality, of any medical men who might be willing to join the staff. Such practitioners should be *bonâ fide* practising in the dispensary district, and the contributions from the patients ought to be so arranged that the income of every such practitioner should not be below £300 per annum, which would be only fair seeing that the greater number of his present paying patients would have been induced by him to join the dispensary.

The advocacy of the views expressed in the Minority Report by Dr. H. Beckett-Overy and others in THE LANCET of July 23rd may perhaps open the eyes of the general practitioner as to what was in store for him. These special pleaders earnestly desire the body of general practitioners to acquiesce in the establishment of a medical sanitary service in whose ranks not one-tenth of the present general practitioners would enter, but under which almost certainly nine-tenths of their patients would ultimately be taken from them. If ever there was a good example of the "Come into my parlour, &c.," argument, this is one. This service, which would be worked by a body of officers who may not inaptly be called the Medical Sanitary Police, would, amongst other things, replace the present Poor-law Medical Service and its officers. Many other services, such as the school medical service, the isolation hospitals, workhouse infirmaries, asylums, &c., are to be merged into this newly created sanitary service. Eventually we reach school clinics and municipal hospitals. To start off with, there might be something to commend this scheme if every general medical practitioner whom it is proposed to so injuriously affect were offered an appointment in the new sanitary medical police. But this is just what Dr. Beckett-Overy and his colleagues know they cannot offer, so they go a long road to prove that, having taken the greater number of our patients away from us, they will return them to us later on in a better state of health! They say that under the recommendations contained in the Minority Report the system of "service and recovery" will be carried out. The machinery for the "recovery" of fees from patients who should have paid a private practitioner will apparently be the same as that in the new Midwives Bill lately before the House of Lords—viz., the county court; of the inefficiency of this we in working-class districts have already a lamentable experience. One word about this "recovery." Imagine a few examples of prosecution of apparently hard cases, and see the newspaper headings, "A poor man persecuted for a couple of bottles of physic," and think how long this "safeguard" is going to withstand the outcry raised against it! And once this so-called safeguard is destroyed how many of the working classes are going to pay for private medical attendance? The advocates of this service promise us great things for the blind, the maimed, and the halt, so that with their restoration to health they will be better paying patients for the general practitioner in the future. It would strike one, however, that such patients would be very unwilling to leave a gratuitous service, which would have done so much for them, and to return and pay even a very small fee to a private doctor.

Most certainly the suggestions of such a thorough-going Socialist as Mr. Bernard Shaw, already favourably alluded to in THE LANCET, viz., making every medical man practising amongst the workers a State medical officer, would be much fairer and better than the half socialistic, neither fish nor flesh, schemes of those who signed the Minority Report. The avowed Socialist would deal far better with us, because by his creed he promises employment to everyone willing to work. With the legislative adoption of the Minority Report we should soon have melancholy experiences for many of the present general practitioners, while there is really no proof, in the midst of all this, that such changes would be good for the community. It will, on the contrary, take a lot to convince some of us that new municipal hospitals manned by young practitioners, paid by a fixed salary, can ever rival the great voluntary hospitals. And in London at least there is a network of medical charities, vast enough to include every case, the thorough efficiency of which must prove that there is no necessity to establish a new charitable or semi-charitable centre. It is quite unnecessary for me to give details as to all the medical charities within reach of the truly afflicted. And if the Poor-law Medical Service has faults it results largely from the niggardly way boards of guardians have paid the highly honourable men who compose it. I would say, indeed, that a lot of the money proposed to be spent under the medical portion of this scheme would be far better and more profitably spent in the erection and support of municipal or State sanatoriums. By such means ten times more good could be done to the workers and the community at large. Before, however, we reach the Parliamentary discussion of this scheme another inroad on general practice will have been made by the new proposals for insurance against unemployment and invalidity. This scheme it is proposed to carry out with, or through the aid of, the friendly societies, the heads of which have up till now proved the master "sweaters" of the medical profession. Most of the insured will have to join those societies, and so another large slice will be taken off the income of the general practitioner.

At present the unfortunate feeling amongst most of us is that though we know these sweeping changes are sure to come we are hopeless and helpless in our endeavour to save ourselves, for after all we seem to have no proper fighting organisation. If we were trade unionists we could organise a strike, for a great strike would settle the matter effectually. But such an expedient might be considered inhuman and would possibly lead to the lynching of a few doctors. But we are still comforted by optimists, who tell us that all will be well if we acquiesce in this or that scheme. We heard those wise voices when the Midwives Bill was passed, and just lately, when the Medical Inspection of School Children Act came into force, we were told that many of the local medical men would be employed by the London County Council—more of the George Washington statements. Just a few weeks since a Bill was before Parliament, introduced, I think, by a consultant, one clause of which compelled medical men to inspect the body and then fill in an elaborate death certificate (a truly state document) and forward the same to the registrar, and for this state service not a penny remuneration was to be paid! From which we must infer that we have wonderful champions for getting fair play for us in the House of Commons.

It is now, I think, sure that we shall suffer under any new schemes, and that in a few years we shall see many present practitioners brought to destitution. When this time arrives it will be too late to do anything for them. *Now* it should be possible for the British Medical Association, the Medical Sickness and Accident Society, and kindred insurance societies, to levy contributions from their members and raise a fund for the purpose of providing old age pensions for those who will so sadly need them. And what better objective could medical philanthropy have than in helping those comrades who owed their fall to conditions over which they had no control?

I am, Sir, yours faithfully,

Mile End, E., August 27th, 1910. M. S. HARFORD.

PHARMACOPŒIAL DOSES.

To the Editor of THE LANCET.

SIR,—In an annotation, entitled "Pharmacopœial Doses," and appearing in THE LANCET of August 20th (p. 575), a favourable hearing is extended to the proposal to introduce into the Pharmacopœia "a maximum dose for 24 hours" for each of the official remedies used by internal administration, and we are told that were this done there would exist "an authoritative expression as to the limits of safety" within which such remedies should be prescribed. Presumably the writer of the annotation contemplates, at least mainly, the government and limitation of the pharmacist, but there is at least the possibility that his method of stating the position may convey to the minds of some the suggestion that there is need also for an "authoritative" control of the physician.

The "limits of safety," it may respectfully be urged, fall within the judgment of the prescriber, not within that of dispenser; and over the judgment of the prescriber most certainly the Pharmacopœia has neither warrant nor control. If, as may readily be argued, the publication of "official" doses in the Pharmacopœia promotes the public safety by enabling the dispenser to detect any accidental lapse on the part of the physician, by all means let such doses duly exist and appear. But they must not be translated as exercising any "authority" over the freedom of the practitioner. Alike in the interests of the individual patient and of the extension of exact therapeutic knowledge, there must be preserved for the physician a "liberty of prescribing"—a liberty to use, in reference both to quantity and quality, whatever he deems likely to promote the welfare of his patient.

The one risk, such as it is, of the new proposal is that by increasing the pharmacopœial apparatus dealing with dosage an undue importance may be attached to this part of the official volume. In short, it is within the possibilities that a definition of the "limits of safety" in dispensing may come to mean to some the "limits of safety" in prescribing. So long as adequate means are taken to avoid this result, and so long as the pharmacopœial doses are presented merely as doses which the pharmacist should not exceed without the special direction and authority of the physician, the profession need not much concern itself about the proposed new departure. It matters little whether the official doses are retained in their present form or whether they are modified or extended in the direction suggested in your annotation. What is of importance, however, is to be quite clear that such doses, whatever their form, have no controlling authority over the freedom and discretion of the prescriber. The "limits of safety" in the administration of any remedy in each individual case must be judged by the practitioner in charge of the patient, and on his own responsibility; they cannot be authorised or defined either by a national or any other form of pharmacopœia.

I am, Sir, yours faithfully,

Harley-street, W. C. O. HAWTHORNE.

GASTRIC ULCER.

To the Editor of THE LANCET.

SIR,—In your issue of August 20th you report Mr. E. Deanesly of Wolverhampton as having said, *re* excision of gastric ulcer:—"It was now known that unless there was distinct pyloric obstruction food did not pass through the new opening, and even after the operation had been done an ulcer might perforate or a new peptic ulcer might form. There was great liability to recurrence both of the pain and other symptoms. Excision should be the operation of choice in all centrally situated ulcers not involving the pylorus or the duodenum." You make no note of this statement having been questioned. Was this really the feeling of the meeting on this important point?

May I quote one case as positive evidence in the other direction in the hope that other surgeons may give us their opinion of the utility of a simple gastro-jejunostomy for a chronic gastric ulcer not situated near the pylorus and not causing pyloric obstruction.

The patient, aged 23, asylum nurse, was sent to me last year to be operated on for a chronic gastric ulcer. The history was typical and extended over four years. She had had several attacks of hæmatemesis and had been unable to take solids for four years. Rest in bed on sparing fluid diet gave but slight relief from the pain.

June 20th, 1909: At the operation the condition found was a large chronic ulcer in the cardiac portion of the stomach, near the lesser curvature. The pylorus was normal. A large posterior vertical junction was made.

Sept. 7th, 1909: The patient has had no pain or sickness since the operation and returned to full duty as an asylum nurse.

April 12th, 1910: The patient has been working constantly, has put on weight, and has had no return of symptoms. On this date she was examined by the fluorescent screen, standing up, whilst slowly swallowing one ounce of bism. carb. mixed with bread and milk. The mixture could be seen passing from the stomach into the jejunum well to the left of the middle line. Meanwhile, the pyloric portion of the stomach gradually filled with the mixture, but none passed through the pylorus, a well-defined convex margin with convexity towards the patient's right hand delimiting the pyloric portion of the stomach. Immediately after the screen examination a plate was taken, and the print clearly shows the condition described above.

July, 1910: The patient continues in normal health.

Bolton has shown by experiments on rabbits that the actual necrosis and ulceration of the stomach are produced by the gastric juice acting upon a cell which is functionally damaged, and that the hyperacidity of the gastric juice increases the tendency to such ulceration, whilst the introduction of a weak alkaline solution into the stomach of a control animal prevents necrosis and ulceration of the gastric mucous membrane of control animal.

Is it not, therefore, possible that the factor determining the cure of a gastric ulcer after a gastro-jejunostomy is the fact that a large graft of jejunal mucous membrane secreting an alkaline fluid has become an integral part of the stomach wall, and that the success of the operation depends not only on making a vertical junction for mechanical reasons but on making a large junction both for mechanical and physiological reasons, and that whether the ulcer be excised or not matters little? I am, Sir, yours faithfully,

Hastings, August 25th, 1910. DAVID LIGAT.

CARDIAC STRAIN.

To the Editor of THE LANCET.

SIR,—Amongst varieties of strain Sir Lauder Brunton, in his recent lecture published in THE LANCET, comments upon the effect of excessive exercise upon the heart, and lends the weight of his valuable opinion to those who consider that the heart may suffer injury. Since the days when I was a medical student I have to some degree been interested in this subject, and although the facts gleaned have been few the impressions based upon them may not be without interest. The effects of exertion upon the heart have to be considered under the headings of immediate and remote effects. Occasionally, no doubt, the power of will is greater than the physical powers of the body to carry out the purposes of the will, and alarming symptoms of distress, possibly even death, may result. Yet when the alarming symptoms stop short of death the probability is that in a few days the heart and vaso-motor system will be as capable as ever of adapting themselves to strenuous activities. Tried severely again and again they may present signs of weakness, but even after having given evidence of such weakness it seems to be doubtful whether if wisely treated they are permanently injured.

Sir Thomas Clifford Allbutt has expressed the opinion that the presence of an early stage of an infectious disease, or possibly only of a feverish cold, may predispose to the immediate harmful effects upon the heart of exertion. I once met with an interesting example of this. A school girl, aged 14 years, rode upon a bicycle for 16 miles against a strong head wind. The following day the rash of measles appeared. Loud systolic murmurs were then audible over the heart, both at the apex and the base, which disappeared during convalescence. The bicycle ride during the earlier stage of the attack of measles had obviously produced dilatation of the heart and the appearance of murmurs. It may be remarked in passing that the appearance of murmurs appears to me to be a far better test of dilatation of the heart in children than increase of præcordial dulness. It is interesting to note that the girl was able to ride 16 miles against the wind the day before the rash appeared. If a girl in an early stage of measles will indulge in active exercise, many a boy, no doubt, will not allow slight feelings of illness to interfere with his desire to take part in competitions involving physical strain, and before we blame physical strain alone such an important factor as concomitant illness requires to be eliminated.

In the healthy heart, however, apparently repeated strain may produce symptoms of disordered function. Perhaps I may be allowed to give some personal experience. In the days of my boyhood and youth my heart used frequently to be subjected to considerable strain without any definite training. For example, I once won a three mile race without having run a mile for about two years. After the age of 30 I engaged somewhat energetically in cycling; riding hills which were considered to be unridable being a weakness in which I indulged. At the end of about two years some cardiac pain was experienced associated with occasional intermission of the pulse. These symptoms were taken as an indication for the more judicious use of the bicycle, and after about

two years they entirely disappeared. It is to be feared that foolish acts are still sometimes committed without, however, ill-effects being noticed. Twice within the past five years I have run three miles. This is not an act to be commended for anyone in middle-age, but it is mentioned to show that in spite of the presence at one time of cardiac pain and intermission of the pulse my heart retains a power for continued exertion.

One sometimes hears of the hypertrophied heart of athletes. That it often exists seems to me to require proof. Hypertrophy of the heart is, it is needless to say, occasionally met with in the post-mortem room, which is apparently the result of over-exertion, but possibly it is not excessive work merely but excessive work in the presence of heat that may lead to hypertrophy of the heart. In other words, it may be that the hypertrophy of the heart in a gas-stoker or in a blacksmith is probably largely toxic. Owing to most of the fluid drunk being passed off by the skin rather than by the kidneys toxic products of metabolism are retained in the body and poison the heart. However true this explanation of the hypertrophy may be, it is very difficult to find any kind of arduous occupation which requires to be carried on in the open air that occasions hypertrophy of the heart. If we allow for the normal variations in the size of the heart and of the situation of the impulse in different individuals it is doubtful whether we should find the heart of the athlete to be often hypertrophied.

This letter, one regrets, is discursive. Briefly it is intended to urge that although few, if any, will deny that excessive exercise may temporarily derange the heart it is very doubtful whether exercise alone, apart from some contributing factor, causes permanent injury.

I am, Sir, yours faithfully,

August 19th, 1910. THEODORE FISHER.

BLIND MASSEURS FOR BERI-BERI PATIENTS.

To the Editor of THE LANCET.

SIR,—While I understand the letter published in THE LANCET of August 20th with the above title is a "disclaimer," yet on reading it am I to understand that as well as disclaiming Dr Cantlie belittles the idea of massage in beri-beri? If so, I can assure him that I have seen the best of results from massage as performed by a real Swedish massour, but he was not blind. From what I do remember of the treatment I would suggest to those who have not tried it to give it a trial. I am, Sir, yours faithfully,

August 25th, 1910. T. L. ASHFORTH, L.R.C.P. Edin.

"SUBJECTS OF SURGICAL INTEREST."

To the Editor of THE LANCET.

SIR,—My attention has been called to a letter in your issue of August 20th on the above subject by Dr. Wm. Bennett of Manchester. In the course of his remarks he states that "general practitioners will thank Mr. Waterhouse for simplifying the disinfecting of operation surfaces." So far as I am aware, I was the first surgeon to advocate the use of tincture of iodine for this purpose. If Dr. Bennett will refer to the *British Medical Journal* of August 4th, 1909, he will find my original paper, which was published several months before Mr. Waterhouse's.

I am, Sir, yours faithfully,

J. LIONEL STRETTON,
Senior Surgeon to the Kidderminster Infirmary and Children's Hospital.

Kidderminster, August 29th, 1910.

DR. C. E. HARRIS FUND.

To the Editor of THE LANCET.

SIR,—We beg to forward you the audited accounts of the above fund. After deducting certain necessary expenses on behalf of Mrs. Harris and her children, during the past year, we have invested the balance—viz., £173 5*s.*—in the purchase of an annuity of £20 for a period of ten years, to be paid to the widow by quarterly instalments. Provision for the six children has been made as follows: (1) The two eldest boys have been admitted to the Fortescue House School, Twickenham (National Refuges); (2) the third boy was successful at his first application for admission to the Royal Asylum of St. Anne's Society, Redhill; (3) the two eldest girls have been admitted to the Girls' Home, Royston (National Refuges); and (4) the youngest girl has been admitted to the Kingsdown Orphanage, Hornsey, for which a friend is paying £3 3*s.* annually.

We wish to express our most sincere thanks to all donors for their ready response to our appeal, and to all those who have so generously helped us in many other ways; to the Editors of THE LANCET and the *Medical Officer* for giving publicity to our appeal, and to Mr. E. W. Drew for his kindness in auditing the accounts.

We are, Sir, yours faithfully,

N. H. TURNER, } Honorary Secretaries
CARL PRAUSNITZ, } and Treasurers.

35, Highbury-grove, London, N., August 15th, 1910.

*** The donations amounted, together with a small sum as interest and as commission from the Commercial Union Assurance Company, from whom the annuity was purchased, to £205 4*s.* 1*d.*—ED. L.

THE SUPPRESSION OF QUACKERY.

To the Editor of THE LANCET.

SIR,—A sense of humour is an advantage always and everywhere. Mr. Pickin possesses it evidently. I should be sorry to think myself devoid of it, but, as I have no doubt he will agree, it ought not to blind us to the serious facts of the quackery question. Credulity among great sections of the ignorant masses and "educated" classes is as gross at the present day as it was in the days when belief in witchcraft was universal, but this does not lessen the obligation of Government to protect weak and simple citizens against the army of cynical rascaldom that now, thanks to the weakness of the law, is able with impunity to exploit them. There is much that is funny and farcical to be found in quackery, as, for example, in the practices of "beauty doctors" and obesity curers. In these directions it is often simply fraudulent, but in most other directions, even where it appears harmless, it is not only fraudulent, it is cruel and deadly. If Mr. Pickin is a practitioner, he may easily ascertain these facts for himself by systematic observation and diplomatic inquiry among his patients. The first case that attracted my attention to the subject many years ago was that of a woman who had allowed a cancer of her breast to go on to a hopeless phase whilst relying upon a heal-all ointment composed of coloured lard. It is easy to illustrate this subject by reference to every class of quack medicines. The victims are perhaps easiest to discover among hospital patients. Teething and baby-quieting medicines form the direct causes of death in a vast number of cases. They turn away attention from the real cause of the baby's outcries, in most cases intestinal pain, and keep it quiet on the way to death or survival as a degenerate wastrel. The mischief arising from quack nostrums of all sorts is well exemplified by the class of indigestion cures. Indigestion is merely a symptom, not a distinct disease. It often indicates a simple functional disturbance, but even then the proper treatment is not continuous dosing with aloes, or other cheap purgative, which is invariably the only potent ingredient of secret remedies for this complaint. On the other hand, "indigestion" may be a sign of organic or malignant disease anywhere within or in the neighbourhood of the alimentary canal. Cases of the more serious kinds are always to be found in hospitals, and inquiry usually discloses the fact that they have been dosing themselves with quack medicines until their malady having assumed a serious or mortal phase they have been compelled to seek relief in the wards. In late years I have given up systematically inquiring for such cases, but some time ago I casually came across a series whilst acting as visiting member of the committee of our small local hospital. These were women suffering from ulcer of the stomach. Nearly all of them had been taking for prolonged periods one or other of the most advertised indigestion cures, the sole active ingredient of which is aloes. One case ended fatally; it might perhaps have been saved by early diagnosis and treatment. Between £3,000,000 and £4,000,000 are now being spent annually upon quack remedies and bogus apparatus, and if it be admitted that the majority of dupes of these forms of coarse quackery receive no permanent injury it will still be evident that the large percentage of victims that are badly or fatally hurt represents a terrible mass of preventable human suffering and misery. The traffic in secret

remedies does not include the whole of quackery. The traffic is used as a cloak by numbers of fraudulent pretenders, and many more palm themselves off as doctors by advertisements, with free use of bogus titles. The cruelty of the hardened quack is unspeakable, and of this I will give an illustration out of my own recent experience. The wife of a poor labourer is dying in the village from a deep-seated cancer pronounced by the best opinion as beyond the reach of surgery. She has already spent money on advertised cures, and towards the end is found by her visitors to be in correspondence with a "cancer doctor" who offers to cure her for 3 guineas. She has been literally starving herself to scrape together this sum, and is deterred from sending it only when she is made to know that a number of letters addressed to the "grateful patients" whose testimonials are published in the quack's pamphlet have all been returned through the Dead Letter Office. To those who have studied and mastered the facts of latter-day quackery the present state of things must seem almost intolerable. I hold that it is the duty of the profession for the sake of humanity, and in spite of misrepresentation or calumny, to force the question to the front, to prove their case, and to leave upon statesmenand the legislature the responsibility for the continuance of the evils and abuses laid bare. I am, Sir, yours faithfully,

Redhill, August 20th, 1910. HENRY SEWILL.

THE BLOOD PRESSURE IN SHOCK.

To the Editor of THE LANCET.

SIR,—In your report of my remarks on shock in the Anæsthetics Section of the British Medical Association on July 28th[1] I am said to have maintained that there was "no proof that shock was accompanied by a low blood pressure." What I said was that the low blood pressure which arises in shock "does not offer any proof that the blood-vessels are dilated or paralysed." I should be glad if you would publish this correction.—I am, Sir, yours faithfully,

Portman-street, W., August 20th, 1910. JOHN D. MALCOLM.

THE MAIN QUESTIONS IN EUGENICS.

To the Editor of THE LANCET.

SIR,—The medical inspection of school children is but part of a larger eugenic survey of the nation whose other components, the sociological and anthropological inspections, must soon engage the attention of legislators. Medical and sociological data have been now for several years collated at the Galton Laboratory, and many doubtful points respecting environment and inheritance have in consequence been made clear, but more accurate results should be got from a national survey. As far as researches in the Galton Laboratory have gone they tend to show that environment as a factor will not upset improvements effected in breeding good stock, but the breeding of bad stock will lay low all schemes for improving environment; and the remarkable conclusions reached by Professor Karl Pearson and his co-workers during their study of the influence of parental alcoholism on the physique and ability of the offspring have already attracted the attention of social reformers. They found no marked relation between intelligence, physique, disease, or mental defect of the offspring on the one hand, and alcoholism in the parent on the other hand. The conclusion that an acquired habit of the parent has no *perceptible* effect on the *immediate* offspring, is confirmation of the principle of the non-transmissibility of acquired characters, but it would not be right to conclude that centuries of alcoholic excess on the part of successive generations would be without effect upon a nation. The subject is too controversial at present to warrant anyone in accepting and utilising one view to the exclusion of the other in an endeavour to draw a sympathetic attention to the undoubted necessity that exists for completing the medical inspection of school children by adding to it the tasks of sociological and anthropometrical investigations. For a beginning these data may be collected in schools by teachers and medical inspectors, as under the recent Act the collection of such data is rendered permissive; the Act expressly states that any educational authority may cause such investigations to be made.

Eugenists are in the main convinced that by safeguarding in every way the good stock and by encouraging the production of larger families among the fitter portion of the population we shall effect the object which all right-thinking persons have in view—namely, an increased fitness, physically, mentally, and morally, among the general population; and although this method has not yet the sanction of public opinion, a survey such as is suggested might be the means of causing the leaders, and ultimately the body of the public, to acquiesce in such a view.

How to promote a selective birth-rate is a problem in national economics which should not differ in its essence from everyday problems of political economy, but it is questionable how far we are justified on purely humanitarian grounds and in opposition to the proved interests of posterity in suspending the operations of a selective death-rate by such means as the provision of sanatoria for the rehabilitation, during their procreative years, of individuals of a type that it is not desirable to perpetuate.

I am, Sir, yours faithfully,

August 29th, 1910. MEDICUS

[1] THE LANCET, August 20th, p. 556.

THE SECOND INTERNATIONAL CONGRESS OF ANATOMY.

(FROM A SPECIAL CORRESPONDENT.)

THOUGH scarcely so successful in some ways as the initial meeting in Geneva five years ago, the Second Congress of the Federated Anatomical Societies of the world held in Brussels from August 7th to 12th has set a seal upon the progressive movement which has aimed at bringing all who are interested in anatomy and its allied sciences into closer touch both in methods, work, and personal acquaintance.

The noble city of Brussels surely merited an early place as the "moving tent" of the Federated Congress—Brussels, the birth-place of Vesalius, the greatest anatomist that ever was, and the seat of a great "Free" University. The added attractions of a great exhibition would, it was hoped, swell the number of congressists from abroad, but unfortunately the effect on these was all the other way, as there is no doubt many were deterred by the common reports of the overcrowding of the city by cosmopolitan sightseers. Another factor which reduced the number of those attending the Congress was its unfortunate clashing with the Congress of Anthropology at Cologne the previous week. Lastly the Unione Zoologica Italiana, for some unexplained reason, sent only a few representatives, and no communications, though providing in Professor G. Romiti (of Pisa) one of the most active and picturesque members of the Congress. Neither was the Anatomische Gesellschaft so well represented as in Geneva, though in the forefront of all the meetings were Professor Waldeyer (of Berlin) and Professor K. v. Bardeleben (of Jena), the "permanent" president and secretary respectively of the Federation. The Association des Anatomistes, on the other hand, were there in large force and furnished the largest proportion of papers and demonstrations. To Professor Brachet of Brussels, its secretary, fell the lion's share in all the local arrangements, and to his great activity, unfailing courtesy, and attention, the great success of the Congress is in large measure due. The American Association of Anatomists, which contributed little to the first congress in Geneva, made up fully for that by sending a very representative and active cohort to Brussels, with Professor Minot of Boston, Mass., as president, and Professor Carl Huber of Philadelphia as secretary. The presence of so many Americans, and the stimulating effect of coming in close contact with their splendid work, demonstrations, and personalities, was a particular source of pleasure and satisfaction to their British *confrères*. The Anatomical Society of Great Britain and Ireland, though a smaller band than at Geneva in 1905, was well represented by Professor A. M. Paterson (Liverpool), President, and Professor A. Macphail (London), secretary, Professor A. Thomson and Dr. S. E. Whitnall (Oxford), Professor A. Francis Dixon (Dublin), Professor I. P. Hill, Professor W. Wright (London), and Professor Waterston (London), Professor R. J. A. Berry (Melbourne), Professor E. J. Evatt (Winnipeg), Dr. Alex. Low (Aberdeen), and Mr. F. P. Sandes (Sydney).

The first event of the Congress, after a preliminary meeting of the presidents and secretaries to arrange the daily

programmes, was a "*raout*" given by the Conseil Communal de Bruxelles in the Hôtel de Ville on the evening of Sunday, August 7th. This grand old building, one of the finest of its kind in the world, is peculiarly fitted for an evening show. The Federative Congress of Anatomists shared the honours on this occasion with several other congresses then meeting in Brussels, and the only drawback was a slight overcrowding which made it difficult to see to fullest advantage the precious art treasures—tapestry and pictures—which adorn the many *salles* of the hotel.

The serious business of the Congress began on Monday, August 8th, at 9 A.M. in the *grande auditoire* of the University in the Rue de Sols. After a preliminary welcome, extended to the Congress by the University authorities, Professor Waldeyer presided over the first *séance de communications*. At these meetings, held from 9 A.M. to 1 P.M. each day from August 8th to 12th, the various presidents afterwards took the chair in turn, and the communication of papers, and discussions thereon, took place. Authors were called to the rostrum in regular rotation from each of the federated societies, and so there was a rich striation of tongues throughout each morning's work. The short 10 minutes allowed to each speaker was a stimulus to great rapidity of elocution, and had it not been for the continuous use of a good epidiascope, showing slides, drawings, &c., these meetings would have been of little interest to any but a professed philologist. They presented, however, a sustained interest in the study of personalities, and were not without humorous, and sometimes dramatic, interludes. The ancient fires of scientific discussion were only occasionally aroused. At one point a brilliant Belgian lady anatomist confronted with eloquent zest the conclusions of a stolid German veteran; at another two of the Anatomische Gesellschaft shrugged scathing scorn at each other's views; but over all the President's bell kept the "rounds" strictly within the three minutes to which "discussion" speeches were allowed to extend. Of humorous incidents two may be recorded, one in which a vigorous young German, dissatisfied with the manipulation of his slides by the epidiascopist, rushed from the rostrum to the instrument, brushed aside the timorous operator, and, putting in his own slides the while, gave the rest of his oration, with lightning rapidity, from under its heavy black curtains; the second was furnished by the enthusiasm of a soft but very persistent tongued lecturer from a remote German school, who had evidently accumulated there a vast series of observations on artificial monstrosities. He came at the end of a forenoon séance, when the "House" was thinning at any rate, but at the moment when his ten minutes were gone, and everybody prepared to rise and go, he launched out at a great rate on another tack, to the discomfiture of the President, who rang the bell again ostentatiously in his face, and of the secretary who breathed soft dissuasion into his ear, all to no effect. Flourishing many pages yet to come, he bent his head again to the task, and was actually still at it, all alone in the large auditorium, after the President, secretaries, and the whole Congress had slid out on their way to lunch!

These morning sittings were often uncomfortably noisy through scattered conversations being carried on throughout the hall, with little consideration shown to the speakers on the rostrum, and on the whole were much less satisfactory than the afternoon meetings. One good issue from them, however, was the appointment of a special commission (international) to revise and systematise the whole question of embryological nomenclature. The suggestion came from the American Society through Professor Minot as spokesman, and it was cordially taken up, the chief posts in the commission being rightly given to American representatives, the presidency to Professor Franklin P. Mall, and the secretaryship to Professor Minot.

The afternoon meetings, it was agreed by all, were the most stimulating and useful part of the Congress. These were held in Professor Brachet's Institute of Anatomy in the Parc Leopold. This Parc—an extensive and delightfully wooded oasis on the eastern outskirts of the city—was formerly a zoological garden, and is now the home of the medical buildings of the University. These lie scattered throughout it, overlooking a picturesque lake, as a series of fine institutes, in which the various departments are housed. The Anatomy Institute is a large, roomy, well-lighted building supplying ample accommodation for the afternoon meetings, which took the form of "go-as-you-please" demonstrations of dissections, reconstruction models, and microscopic and experimental work. The specimens lectured on in the mornings were mostly on view here in the afternoons, and there were in addition many extra demonstrations. The moving crowd gathered here and there in little knots to tackle, at close range, the various points made, and the discussions here were really useful, with the subject matter close at hand within the view of all. It was here, too, that personal acquaintances were most readily made and friendships struck likely to be of lasting advantage.

A most interesting lecture was given one afternoon in the Natural History Museum, closely adjoining the Parc Leopold, by Professor Dollo, in which he demonstrated the unique and colossal specimens of the Iguanodon bernissartensis, of which Brussels is the proud possessor.

A most pleasant social function of the Congress was a banquet held in the Taverne Royale on the evening of Wednesday, August 10th. Professor Waldeyer presided over a large assemblage of ladies and gentlemen, and ably gave the usual loyal and patriotic toasts. Several speakers paid high tribute to the hospitality of the city of Brussels and its university, and to these Professor Brachet cordially replied. Professor Henneguy, for France; Professor Minot, for America; Professor Romiti, for Italy; Professor Schäffer, for Austria; and Professor Macphail, for Great Britain, all added their appreciation of the energy of those who had charge of the local arrangements which had ensured the success of the Congress. Professor Renant and Professor Bardeleben also spoke, the toast of "The Ladies" being ably expounded by the latter.

The results of the Congress as a whole throw a strong sidelight on the present position of British and colonial anatomy. Both America and the continent afford striking contrasts to the British school in the matter of embryology and histology; the communications of the members of the two former were particularly rich in microscopic anatomy, with Great Britain, comparatively speaking, nowhere. The relegation of the teaching of histology to the physiologists in this country is a phenomenon which our colleagues in America and the continent profess to be quite unable to understand and to them it seems a quite unnatural combination. Certainly the contributions from members of the Anatomical Society—the naked-eye dissections of the eye and orbit, by Professor Thomson and Dr. Whitnall; the embryological sections and models by Professor Hill, Professor Evatt, and Professor Cameron; the anthropological results by Professor Berry and his colleagues in Melbourne—amply show that our workers can hold a brief in these subjects as ably as any of our "federated" brethren, but the general conclusion forced upon us by the work shown at the Congress is that the almost complete relegation of the teaching of histology to the hands of the physiologists has been a distinct blow to the prestige of British anatomy.

The successful result of the meeting in Brussels amply justifies the belief that the Federative Congress may in the future be looked forward to as a useful, stimulating, and enjoyable event by anatomists the world over, and a cherished means of forging the bonds of brotherhood between all workers in anatomical science.

BRISTOL AND THE WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

Bristol General Hospital.

Mrs. Proctor Baker has given £10,000 to provide a maternity ward for the Bristol General Hospital. The ward is to be dedicated to the memory of her late husband, Mr. W. Proctor Baker, who was for several years president of the institution.

Water-supply of Minehead.

The inauguration of the supplementary water-supply of Minehead was carried out on August 13th, when the supply was turned on by Mr. A. F. Luttrell of Dunster Castle, in the presence of a large gathering. At present Minehead has four sources from which the water is derived—namely, Broadwood, Periton, Woodcombe, and Longcombe. The new works derive their supply from an area of about 400 acres, with a collecting chamber of 5000 gallons, the water

being connected with the town by about six miles of four-inch pipes. The enlargement will now allow for a supply of 200,000 gallons daily, which practically doubles the former amount. The Local Government Board about 12 months ago sanctioned a loan of £3850 for the undertaking.

Longevity.

Mr. Richard Peter, J.P., who is stated to have been the oldest solicitor and magistrate in England, died recently at Launceston. He was born at Bodmin on Oct. 9th, 1809, and was baptised in the parish church of that town on Dec. 3rd of the same year.—Miss Maria Leman celebrated the hundredth anniversary of her birthday on August 19th, and received a congratulatory telegram from the King. Miss Leman was born in Clifton, Bristol, and has resided for 52 years in Ilfracombe.—At a recent meeting of the Dorchester board of guardians it was stated that a man named Job Green who had been admitted to the workhouse was born at Joller Porcorum, West Dorset, in June, 1809, and was consequently in his 102nd year.

The British Red Cross Society.

A very successful meeting was recently held at Barnstaple in connexion with the British Red Cross Society, when it was decided to form a voluntary aid detachment for men in the town, with Dr. George Stephen Ware as medical officer.

Presentation.

At a meeting of members of the Axe Vale Golf Club, held at Seaton (Devon) on August 20th, Mr. Henry Albert Pattinson, medical officer of health of Seaton urban district, was presented with an illuminated address and a cheque for 55 guineas in appreciation for his services as honorary secretary to the club.

August 29th.

WALES.

(FROM OUR OWN CORRESPONDENT.)

Housing Conditions in Newport.

IN his annual report for 1909 the medical officer of health of Newport, Dr. J. Howard-Jones, gives some interesting information relating to the housing of the working classes in that town. The population of the borough is estimated at 78,336, and during the past 20 years over 8000 new houses have been erected, but there is still a scarcity of cottages at a low rental, which leads to the occupation of houses by more than one family. During the past five years more than 1000 insanitary or dilapidated houses have been dealt with by a special subcommittee of the council, who have required 48 houses to be closed. It is rather disquieting to be told that even when the older cottage properties have been put into a proper condition the subcommittee will still find work ready to its hand in connexion with houses erected within recent years, which, it is said, are fast degenerating into a dilapidated state. Dr. Howard-Jones attributes this unsatisfactory position not only to the extremely speculative quality of work in the buildings, but also to dilapidations produced by unsatisfactory tenants. As a remedy for the latter he suggests that the owners of cottage properties in the town should combine and make a "black-list" of those tenants who habitually neglect and ill-treat their dwellings. It would then be possible to exercise discretion in the selection of tenants, and if those who were found to be undesirable experienced difficulty in obtaining a house they would be compelled to treat the landlord's property with greater respect. The health committee has given some assistance to property owners by serving a notice upon the occupiers of those houses which have been recently repaired, renovated, or cleansed, pointing out that it is the duty of the tenant or occupier to keep the house and premises generally in a thoroughly sanitary condition, and that the occupier will be prosecuted if he fails to keep the house in a clean and sanitary state, or if he allows a sub-tenant to neglect his rooms so that they get into a dirty state. The notice is printed on a card so that it can be hung up. Water-carriage is universally adopted in Newport, though it is to be regretted that a considerable number of cottage houses are not provided with a flushing cistern. This is due to what appears to be misdirected economy on the part of the corporation whose water department makes a charge for this very necessary appliance. A dividend-earning water company might be forgiven for thus taxing cleanliness, but such a course is unpardonable in a sanitary authority.

Pauperism in West Wales.

At a recent meeting of the Haverfordwest board of guardians Mr. Hugh Williams, a Poor-law inspector of the Local Government Board, commented favourably upon the decrease which had taken place in the amount of pauperism in the union, and, referring to the probable effect of the Old Age Pensions Act, he said that he had been greatly impressed when investigating cases of appeal under the Act by the very narrow margin which existed between the economic position of the small farmers in the hill countries of Wales and the actual paupers. The latter were relieved of all responsibility for the future, while the farmers did not know what might happen to them any week, and were often on the verge of pauperism.

The Brecon Education Authority and School Accommodation.

It is to be hoped that the views of the Brecon education authority as to the accommodation and furnishing of the public elementary schools under their charge are not held by any other similar authorities. The Board of Education has insisted that certain schools in the county which required to be equipped with new desks should be provided with those of the dual type. A clerical member of the education committee protested against this form of desk apparently for the sole reason that the schools could not then be used for other purposes than those of a school. The majority of the committee appeared to agree with their colleague that a school building was not intended to be used primarily as a place in which a school should be held but for parish meetings or similar public gatherings, and three members of the committee were appointed as a deputation to interview the Board on the matter.

August 23rd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Report on the Dublin Hospitals.

THE Board of Superintendence of the Dublin hospitals, which is a body charged with the inspection of the Dublin hospitals in receipt of Government grants, has recently issued its annual report. The institutions under supervision are: three general hospitals—Dr. Steevens', the Meath, and the House of Industry; two maternities—the Rotunda and the Coombe; the Westmorland Lock, the Cork Street Fever, the Royal Victoria Eye and Ear, and the Royal Hospital for Incurables. The grants were not given on any regular system, and most, if not all, of them date from the time of the Irish Parliament. The smallest grant is that received by the Royal Victoria Eye and Ear, £100; and the largest by the House of Industry, £7600. The latter hospital, like the Westmorland Lock Hospital, is practically maintained by the Government. The board comments favourably on the low cost per bed of the Dublin hospitals, which seems to be less than half that in comparable institutions in London, but as it is impossible to separate the expenses of out-patient departments, the comparison is hardly exact. The board records no fault in the general management of the hospitals superintended, but notes the willingness of the individual hospital authorities to accept suggestions on matters of detail where improvement appears possible. The work done in the out-patient departments is stated not to be as thorough in character as that in the wards. The board quotes the work done by "lady almoners" at St. Thomas's and other hospitals, and suggests the employment of similar officers in connexion with the Dublin hospitals. The references of the report to the out-patient question have roused a good deal of newspaper comment and correspondence in the daily papers. Much criticism has been directed at the hospitals for not solving a problem—that of sickness in the slums—which hardly comes into their field. Doubtless good could be done by linking hospital work with the activities of other charitable agencies, such as those for home nursing.

Infant Mortality in Ireland.

A conference on infant mortality was held last week by the Women's National Health Association. In her opening

statement Lady Aberdeen, the President, mentioned that the rate of infant mortality for Ireland as a whole, 92 per 1000, compared favourably with that for England, 126, and for Scotland, 116. Nevertheless, the rate in the larger Irish towns was very high—in Dublin 141 per 1000, in Belfast 139, and in Cork 126. The Women's National Health Association was now working at the subject, and had established a babies' club in Dublin where instruction was given to mothers on the best ways of feeding and caring for their children. The association also managed the pasteurised milk depôt established by Mr. Straus. Lady Plunket gave an interesting account of her campaign against infant mortality in New Zealand organised by Dr. Truby King, and of the work of the "Plunket Nurses," who give help where required in the tending and nursing of babies.

A New Hospital for Consumptives in Dublin.

Some time ago Mr. Allan Ryan offered to the Women's National Health Association a sum of £1000 a year for five years to be applied as that body thought best in the campaign against tuberculosis. After due consideration it was decided to invite the Dublin corporation to lend its isolation hospital on the Pigeon House Wall for use as a hospital for advanced cases of consumption. To this the corporation agreed, and the hospital was opened last week by His Excellency the Lord Lieutenant. There is accommodation for 25 patients. The medical staff are: Sir John Moore (consulting physician), Dr. M. F. Cox (consulting physician), Sir John Lentaigne (consulting surgeon), Dr. Frank Dunne (visiting physician), and Dr. Alfred Boyd (visiting physician). With the additional accommodation soon to be provided at the Royal Hospital for Incurables, this new hospital should do much to isolate cases in their most infective stage.

Typhus in Connemara.

A serious outbreak of typhus fever has occurred in Lettermullen and Gorumna, two islands off the coast of Connemara. Some seven or eight deaths have occurred in the past few weeks, and about 30 cases in all have been discovered. There was great difficulty in nursing the cases, as the affected district was some 30 miles from the workhouse hospital. It was next to impossible to find accommodation for the nurses who were brought from Dublin. After some time, however, a national school was placed at the disposal of the authorities as a temporary hospital. Mr. G. A. Francis, the medical officer of the district, is assisted by the officer of the neighbouring district, Dr. J. F. Byrne, and by the Local Government Board inspector, Sir J. Acheson MacCullagh.

A Medical Deputy-Lieutenant.

Sir John William Moore, visiting physician to the Meath Hospital, and past president of the Royal College of Physicians of Ireland, has been appointed a Deputy Lieutenant for the county of the city of Dublin.

The Belfast Hotel Fire.

The jury, in returning a verdict in reference to the recent fire in the Kelvin Hotel, Belfast, as a result of which six people died and others were seriously injured, have recommended that the Belfast corporation be strongly urged to seek immediate powers from Parliament, giving them authority, firstly to make by-laws to demand that all alterations to existing properties should be carried out to their requirement, and secondly to inspect the hotels in the city and to see that proper provision is made for the safety of persons residing therein. They also recommend that notices be placed in prominent places showing means of exit, and that additional fire-alarms be erected throughout the city.

Memorial to King Edward VII. in Belfast.

A number of representative citizens of Belfast, on the invitation of the Lord Mayor, met recently in the City Hall, Belfast, to take into consideration the question of erecting a memorial in honour of his late Majesty King Edward VII. After very full consideration of the matter it was decided to call a public meeting in the City Hall on Sept. 13th, at which it would be recommended, as the most suitable tribute to the character and sympathies of his late Majesty, that an additional block for administrative and other purposes at the Royal Victoria Hospital (which is imperatively necessary for the further development of the work of the institution) should be erected and called by his name. This was a unanimous decision.

County Antrim Infirmary, Lisburn.

It has been suggested that the county of Antrim should give to the infirmary in Lisburn £200 as an annual increase. The representative of Ballymoney said, at a weekly meeting of the guardians of that town on August 25th, as far as they in Ballymoney were concerned, the Lisburn Infirmary was a dead letter. They, no doubt, paid £84 3*s.* 11¾*d.*, which was their proportion of the union contribution of £600 to the Lisburn Infirmary, while on the recommendation of their various medical officers they had paid for patients sent to other hospitals £56 13*s.* 1*d.* They paid that as well as the contribution to Lisburn County Infirmary, from which they derived no benefit at all. They might, he explained, either continue their present plan, or in the future they might send all patients to the Lisburn Infirmary. To test the matter, he moved the following resolution, which was unanimously passed:—

That the medical officers of this union be requested to inform the board of guardians if, in their opinion, it would be advisable in the interests of their patients requiring special treatment to send them to the county infirmary or to the special hospitals in Belfast as heretofore.

Primary Education in Ireland.

The annual report of the Commissioners of National Education in Ireland for the year 1909 is sorry reading. Owing to want of funds they have had to suspend the awarding of grants for the building and improving of national school houses, many of which are in a deplorably insanitary condition. Only four small grants have been awarded in the 12 months, and the Commissioners add that it is "impossible to say how much longer this serious crisis will continue." Recently the Commissioners told the Treasury that £100,000 per annum would be required for five years. The Treasury would not promise more than £40,000 for three years, this sum to be supplemented by £70,000 from the Irish development grant, but it was discovered there was no available money to be got from the development grant, and so we have to put up with school houses that are in too many cases a disgrace to the country and a menace to public health.

Severe Weather in Ulster.

The present summer will long be remembered in Ulster as specially characterised by rain, storm, and absence of sunshine; indeed, there have only been about three weeks of anything like normal weather since June. However, last week was by far the worst, and as a result thousands of acres were laid under water, crops were terribly injured, and an immense deal of damage was done to property. On the night of August 26th several parts of Belfast were flooded.

August 29th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

New Apparatus for the Treatment of Fractures.

AT a recent meeting of the Surgical Society M. Broca presented a report on a new apparatus submitted to the society by M. Lambret. It was intended for the reduction of fractures through the diaphyses and was provided with two pegs, which were fixed in the bone, one above and the other below the seat of fracture; at a distance from the fracture there were other pegs connected to a rod which could be lengthened at will by means of a rack and pinion. He said that the apparatus seemed to be ingenious and would probably be useful in cases of great displacement. It, moreover, permitted massage of muscles and joints and was not likely to cause discomfort to the patient. The appliance is an ingenious combination of methods which have been recommended by various other surgeons.

Treatment of the Morphine Habit.

In the treatment of cases of the morphine habit M. Morel-Lavallée recommends that at the outset the morphine should be replaced by some allied narcotic which should be administered not subcutaneously but by the mouth. At a meeting of the Société Médicale des Hôpitaux he said that there were three narcotics of which trials had been made—namely, héroine, which had the disadvantage of being more toxic than morphine; dionine, which could only be administered hypodermically and was, moreover, very expensive; and pantopon, which was a preparation of opium

discovered by M. Sahli of Berne. Pantopon was of constant composition and possessed all the properties of opium, including its sedative, antitoxic, and psychical effects. From comparative trials of opium and pantopon made in the wards of which M Morel-Lavallée had charge it would seem to be a very useful drug, capable of rendering great services in everyday practice.

Congress of the French Pædiatric Association.

The Congress of the French Pædiatric Association was held recently in the small amphitheatre of the Faculty of Medicine. Professor Hutinel, who presided, delivered an address in which he spoke of the absolute necessity of French specialists in children's diseases attending such a meeting every year. Professor Weill of Lyons and Professor Moussous of Bordeaux were then appointed provincial delegates on the council, after which the reading of papers and their discussion were immediately proceeded with. The thymus body was the first subject on the official programme. After M. Marfan and Professor Weill had made some remarks on its pathology, M. Victor Veau, in reviewing the surgical questions connected with it, said that the principal operation was partial subcapsular thymectomy; this was not a severe operation and gave very good results in sudden attacks of suffocation and in permanent dyspnœa. In spasm of the glottis it was not indicated unless physical signs of hypertrophy of the thymus body coexisted with the spasm. The effects of this operation in cases of thymic stridor have not been encouraging, and it was therefore not necessary to remove the thymus body when only stridor was complained of. Other speakers on the same subject were M. Cruchet, M. Tixier, M. Frœlich, M. d'Oelsnitz, M. Nobécourt, M. Roux, M. Boissonnas, and M. Barbier. The second subject on the official programme was the bacteriology and epidemiology of cerebro-spinal meningitis, introduced by M. Richardière and M. Lemaire. M. Moussous and M. Rocaz described the symptoms and diagnosis of the disease. M. Netter, in discussing the treatment, mentioned lumbar puncture, which was so useful in diagnosis, hot baths, and the most efficacious method of all—namely, antimeningococcic serum, preceded by collargol either applied externally or injected intravenously. Pain might be combatted by salicylate of sodium, or still better by external application of analgesics, by salicylate of methyl, by guaiacol, by spirosal, by salol, and in exceptional cases by injections of morphine. Anorexia might be relieved by hydrochloric acid and pepsine. The antimeningococcic serum ought to be injected into the spinal canal. A quantity of cerebro-spinal fluid greater than the serum to be injected was first withdrawn by lumbar puncture, and the injection was then made slowly so as to avoid sudden compression. The amount of serum injected varied according to circumstances. M. Netter usually gave 30 cubic centimetres, but in urgent or intractable cases he might give as much as 45 or 60 cubic centimetres. He gave injections systematically for three or four successive days, after which they were stopped or continued according to the indications given by the patient's condition. Usually they were continued until the cerebro-spinal fluid contained no more microbes. The use of the serum had occasionally been followed by serious and even fatal effects. In the subsequent discussion M. Montagnon said that in cases of cerebro-spinal meningitis lumbar puncture might cause a rise of temperature amounting to 1° or 1·5° C. The next meeting of the association will take place in Paris during the first half of the month of October, 1911.

August 29th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Cholera in Southern Italy.

"IF the King is not at the seat of danger, you may be sure that the cholera is not spreading." So said to me an Italian consultant to-day, and the saying is full of significance. Informed every few hours of the movement, upwards or downwards, of the epidemic, his Majesty knows exactly whether or no his departure for the said "seat of danger" is called for, and his informants, official and non-official, know equally well that to exaggerate or to minimise the truth would entail on them the severest penalty. Confidence is thus inspired throughout the kingdom as to the success of the measures taken to circumscribe the disease, and while no effort is spared, even in the provinces farthest removed from the cholera-visited region, to guard against the enemy, that confidence is in nowise excessive. Another fact, hardly less reassuring in the hygienic situation, is the published opinion of Dr. Guido Baccelli as to the efficacy of the operations set on foot by the Direzione Generale della Sanità, whose working head, Dr. Santoliquido, is, in Baccelli's estimate, "a man of great ability and of not less modesty, controlling a staff of assistants of equally approved intelligence and energy." What is required in such visitations, continued the dean of Italian medicine, is the coöperation of the public with the Government. When the two work in sympathy the results are as immediate as they are satisfactory. In 1894, for instance, Rome was the scene of an explosion of cholera, but after numbering some 14 victims it was practically stamped out by the sanitary officials, seconded by the steady observance of regulations on the part of the citizens. A similar result was obtained during an outbreak of *pestis bubonico* at Naples—the Government officers profiting by the loyal coöperation of the people. Asked categorically whether the present outbreak in Apulia was really one of "cholera morbus" or "Asiatic cholera," Dr. Baccelli replied: "Undoubtedly, when Professor Gosio, the highly accomplished bacteriologist of the Ufficio della Sanità Generale, has pronounced it to be so by every test at his command, there can be no question as to the nature of the disease. All things considered," said Dr. Baccelli in conclusion, "I do not apprehend a diffusion of the disease. Sporadic cases may occur, but the epidemic will practically remain circumscribed till it disappears." It was not till August 19th that Italy fully realised that cholera had effected a landing on the Apulian littoral. Possibly introduced by a band of gipsies from Batoum, or, more likely, by crews of vessels hailing from the Russian shores of the Black Sea, it declared itself a few days before that date, Trani, on the 18th, having numbered 26 cases and 15 deaths, and other towns in the province of Bari registering similar returns, though, on the whole, death did not follow so rapidly on the first symptoms as at the former seaport. The interval, indeed, between seizure and collapse was brief enough to justify the epithet "fulminante" applied to the cases, a fact which undoubtedly induced something like panic, followed by a stampede of such of the population as possessed the means of travelling. As invariably occurs in such visitations, it was the patients of least "resisting power," or whose physical condition, impaired by alcoholism or depraved habits, made them "candidates" that were "picked off" at the beginning—the less predisposed being affected later and with less virulent symptoms, yielding a lower percentage of mortality. In the day now passing the returns are still more reassuring, though the precautions taken by the authorities on the mainland and in the islands are in no respect relaxed. Dr. Santoliquido has drawn up and issued for general distribution an admirable little summary of the nature, the origin, the mode of propagation, and the treatment of cholera, with the main rules to be observed, personal and public, in presence of the visitation. The great body of the citizens seem already responding to the appeal thus made to their intelligence and moral courage; at least, we have fewer instances of recourse to "faith-healing" or from other developments of "Christian Science," which take the form of processions to the shrine of this or that local saint whose intervention is invoked by ritual observances and votive offering. This coöperation of Government and people, hitherto so rare but now penetrating to the more superstitious of the rural population, is of good augury, not only in the immediate future, but also in prospect of the hard winter too surely in store for Italy. As Signor Antonio De Tullio, president of the Chamber of Commerce at Bari, has just indicated to the public and the profession, the outlook for the close of the year and the commencement of the next is gloomy indeed. Vineyards destroyed by cyclones and "nubifragi," grain crops poor in quality and still poorer in quantity, the increased cost of victuals, the rise in house rent—all of the conditions at present pre-occupying commune and town council alike—have found a terrible ally in the outbreak of cholera. The "last straw" in the collapse of the public welfare would be such a "scare" as would keep the foreign visitor aloof and deprive Italy of a resource which brings in nearly half her yearly revenue. Fortunately that

"scare" finds less and less encouragement day by day—thanks to the energy and the tactics of the Board of Health, reinforced by the calm and the fortitude of the mass of the population.

August 26th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Cholera Epidemic.

THE recent outbreak of cholera in Russia and Italy, two countries conterminous with Austria, has caused considerable anxiety among our population, and the most stringent measures have been adopted by the Board of Health to prevent any extension of the disease across our frontier. The danger, however, is great, for intimate relations exist between the Austrian population in the border districts and their Russian or Italian neighbours. Austria being inhabited by eight different nations, the frontier is, for the most part, a political rather than a national line of separation, and it will therefore be easily understood that the commercial and social intercourse between the residents on both sides of it is certain to increase the danger of an extension of the disease. Ever since cholera has been reported from the East quarantine has been imposed on all travellers arriving from that quarter, but now there is a very strict supervision not only of all travellers, but also of their luggage and of merchandise entering this country. Linen and second-hand clothes, in which an extensive trade is carried on, are subjected to such an ordeal that this class of business is nearly stopped. The danger is much increased by the hostility which the bulk of the population in Russia is manifesting towards the sanitary procedures of their respective governments as appears from the rioting which has followed attempts at disinfection. In Austria, however, the population is well aware of the necessity of prophylactic measures, and submits to the unavoidable inconvenience in a spirit of resignation. Leaflets explaining the nature of the epidemic, its danger, and the means of combating it have been freely distributed, and by this means the supervision of many possible sources of contamination and importation has been undoubtedly facilitated.

Death of Professor Oser.

Professor Leopold Oser, chief of the Rothschild Hospital and of the medical department of the Vienna Poliklinik, died recently, after a prolonged illness, in his seventy-first year. Professor Oser had a high reputation as a specialist for diseases of the stomach and alimentary canal. He contributed numerous articles on these questions to the medical journals, and his treatise on "Diseases of the Pancreas" is a standard work on the subject. He was the first to point out the importance of the mechanical forces involved in stenosis of the pylorus. The significance of pain in the diagnosis of duodenal ulcers and peptic ulcers in the stomach was also one of his early discoveries. As an author he was so painstaking in his work that his rate of literary production was rather slow. A twelvemonth ago he reached his seventieth year, which is the age limit for a professor in an Austrian university, but in consideration of his services he was granted the prolongation of the so-called honorary year (*Ehrenjahr*). During this period he died, and his loss is felt keenly by his numerous friends, pupils, and patients. His position as Chief President of the Board of Health with the title of an Imperial Councillor placed him on practically the highest level of distinction attainable by a medical man in this country.

Infectious Diseases in Austria.

A recently issued official report gives some interesting statistics relative to the prevalence of infectious diseases in this country during the spring months of 1910. A case of small-pox which was imported from Russia and terminated fatally was the means of communicating the disease to a man employed in the cemetery; this man in his turn infected his medical attendant, whose brother and sister also became ill. All were vaccinated and recovered. Another series of 6 cases occurred in Galicia, on the Russian frontier. Scarlet fever was prevalent in the rural northern districts; in Vienna only 2100 cases were recorded, a proportion of 1 case per 1000 inhabitants; in the southern mountainous regions and in the coast districts only sporadic cases occurred. The mortality was 7·5 per cent. on an average, death being due to heart failure in 60 per cent. of the cases. Under the heading of diphtheria there were 2733 cases with a mortality of 11·8 per cent.; the majority of these patients were treated with antitoxic serum, except in Galicia and Carinthia, where less than 50 per cent. of the patients received serum treatment; the virulence of the disease was said to have been gradually diminishing for several years. Typhoid fever occurred in 3024 cases, of which number more than 60 per cent. happened in Galicia on the Russian frontier; the cause seemed to be polluted water in nearly all the cases there; the mortality was 7·7 per cent.—about the same as for diphtheria. A few sporadic cases of blackwater fever occurred in Bohemia, with a mortality of 11 per cent. Only 9 cases of dysentery were reported, with 3 deaths. Cerebro-spinal meningitis was notified in 50 cases, with 11 deaths; there were 6 cases in Vienna; the small epidemics in various countries of the Empire have had an average mortality of 29 per cent. Under the heading of poliomyelitis anterior 59 cases were reported, with 5 deaths and 25 recoveries; the whole of these cases were sporadic and were distributed all over the Empire. Under the heading of pertussis 7316 cases were notified during the spring, but it must be added that many cases are not reported; 2·5 per cent. of the patients succumbed to the disease. Erysipelas occurred in 558 cases, with a mortality of 5 per cent. There were over 10,000 cases of trachoma, mostly in Galicia, but this number includes many cases long under observation, only 232 new cases having been reported. Under the heading of anthrax 11 cases were reported, with 2 deaths; all these patients had been engaged in the leather and hair trade, and the cases were sporadic.

August 29th.

CONSTANTINOPLE.

(FROM OUR OWN CORRESPONDENT.)

Cholera in Russia; Feeling in Turkey.

MOST serious accounts of the spread of cholera in Russia have come to hand. The following official statistics are published in the Russian papers. Of 57,720 persons attacked, 25,554 have died; that is to say, as many fatal cases have already occurred as in 1908 and 1909 taken together. The epidemic has been most severe in the districts of Don, Ekaterinoslav, Kherson, and Kuban. Professor Rein considers the cholera epidemic of this year as being a national calamity and one affecting the whole fabric of the Russian Government. He was appointed by the Government to execute all the necessary measures of prevention. The greatest danger seems to consist in the fact that the cholera has infected such territories and out-of-the-way districts of the empire where no medical help exists at all. In many villages the peasants shut up their houses and fly in mad despair in all directions, thus carrying with them the germs of the scourge and infecting large tracts of land. In the province of Kyazan four cities and 49 villages are infected, and hundreds of persons are dying weekly, and a similar state of things exists in the districts of Yelisawatgrad, Bakhmut, Novotcherkask, Kostroma, and Poltava. In the city of Ekaterinoslav alone 2044 persons were infected and many hundreds died. In Petersburg there were 1268 cases, of which 370 died. Even in Tzarskoye Seloe, the residence of aristocracy, where there is excellent drinking water, two cholera cases occurred. What makes the epidemic so specially serious and increases the death-rate is the superstitious trend of mind of the Russian lower classes of population. People have been mutilated, tortured, or killed because they are suspected of having poisoned the wells and other water-supplies. The police seem to be helpless in dealing with a low, ignorant rabble. In many places the sanitary commissioners and medical officers meet with enormous difficulties in attempting to take the necessary measures of prevention and cure. A good number sustain heavy injuries; some even lose their lives in their attempts at alleviating the distress. In Constantinople itself alarm is spreading. Great precautions are being taken to prevent the Russian epidemic spreading to Turkey. Milk depôts, water-sources, markets, and the like are being visited by sanitary agents of the municipality and submitted to strict examinations. I learn that ice-cream vendors are forbidden to traffic in the streets. As if the

cholera were not misfortune enough for Russia, bubonic plague is reported from Odessa, where it made its appearance on May 22nd. The authorities, however, kept the fact secret in order not to cause public alarm. The first two deaths from plague occurred in a baker's shop. From here the epidemic spread. The exact number of deaths is not given, as the authorities continue to hide the full extent of the epidemic. Isolated cases of bubonic plague still occur. In addition, a cyclone recently devastated the northern part of the Crimea, and was accompanied by a brief earthquake shock that was felt over the extent of 200 kilometres to the north of the Crimea. All these manifestations excite the superstitious feelings of the Russian population, and the feelings of apprehension are spreading to this country.

August 15th.

CHARTHAM ASYLUM, CANTERBURY.—The life-saving apparatus at the East Kent Lunatic Asylum, Chartham, has just been augmented by a new specially designed fire escape of Merryweathers' "self-supporting" pattern. It has three telescopic ladders extending to a height of 40 feet, and its properties are such that when fully extended it can stand entirely self-supported, with a man at the head of the ladders, without resting against a building and without the aid of poles or props. It can thus be used as a water tower for directing a jet into the upper floors of burning premises. It is claimed to be the lightest and handiest self-supporting escape extant.

THE ABERDEEN PARISH COUNCIL AND THE POST OF VISITING MEDICAL OFFICER TO OLDMILL POORHOUSE.—At the present time considerable interest is being taken in medical circles in Aberdeen over the appointment of a visiting medical officer to Oldmill Poorhouse. Prior to the year 1908 there were two poorhouses (East and West), both situated in the city, and each with a visiting medical officer. In 1908 a new poorhouse was opened at Oldmill, a distance of three miles from the city, to take the place of the two that were in town. The medical staff at Oldmill was to consist of a visiting medical officer and a resident medical officer. The late Dr. J. J. Y. Dalgarno, from the East Poorhouse, was appointed visiting medical officer at a salary of £70 per annum, with £5 additional under the Lunacy Acts. This salary has always been considered totally inadequate for the work to be performed, keeping in view the facts that the poorhouse is three miles from the town, that there are always over 200 patients in the infirmary alone, and that the duties and responsibilities, as laid down by the parish council, are by no means light. Amongst other things, the visiting medical officer has to visit the poorhouse every alternate day and at any other time should emergency arise, write quarterly and annual reports to the council and Local Government Board, and generally supervise the dietary, sanitation, and ventilation of the poorhouse. As the poorhouse is situated over three miles from the centre of the city and at a considerable distance from a tramway terminus the travelling expenses make a serious inroad on the salary given; in fact, calculating moderately, more than half the salary would be absorbed by driving expenses at ordinary Aberdeen rates. Owing to the lamented death of Dr. Dalgarno in May last the post of visiting medical officer became vacant, and the Local Government Board took this opportunity to bring pressure to bear on the parish council to improve the medical administration of the poorhouse and to considerably increase the salary. In spite of this the post has been advertised by the parish council under the old conditions and at the same salary. So strongly did the medical profession feel in the matter that a meeting of the local branch of the British Medical Association was held. After a full and lengthy discussion of all the circumstances and conditions, the following resolutions were unanimously agreed to:—(1) That the salary at present offered by the parish council is grossly inadequate; (2) that no medical practitioner should apply for the post under the present conditions; and (3) that the minimum salary should be £150 per annum. It was further resolved that a circular embodying these resolutions should be sent to all medical practitioners in and around Aberdeen, and that the parish council and the Local Government Board for Scotland should be informed of the action taken by the local branch of the British Medical Association.

Obituary.

SIR CONSTANTINE HOLMAN, M.D. ST. AND., M.R.C.S. ENG., L.S.A.

EVERY member of the medical profession will share our profound regret at the announcement of the death of Sir Constantine Holman, which occurred at Ramsgate on August 18th, in his 81st year. His death was unexpected, for although during the last 18 months or so the burden of his years had begun to weigh on him, and arterio-sclerosis was telling its tale, he was apparently in his usual health when he left London for Ramsgate to spend an accustomed holiday. Until comparatively recently he had enjoyed robust health for so old a man, and it is difficult to associate the idea of death with his fine presence, erect port, well-maintained mental energy, and unfailing interest in the numerous and important affairs in which he had played a leader's part. But after he had been at Ramsgate a week he suffered from a severe epistaxis, and from this time forward he sank, painlessly and quietly, it being impossible to imagine a more peaceful ending to a strenuous career.

Sir Constantine Holman was the son of Dr. Henry Holman, a medical practitioner at Hurstpierpoint, Sussex. He was born on Oct. 23rd, 1829, and received his early education at Brighton College, whence he proceeded under the old system of professional training to Reigate, where he was apprenticed in 1847 to Messrs. Thomas and Peter Martin, his connexions by marriage, who had a large practice in that district, and enjoyed a professional position which made training under them valuable. From the beginning of his career Holman was plunged into medical politics and the organisation of medical benevolence, for Mr. Thomas Martin, his immediate chief, was a vigorous worker in these fields. In 1848 Holman acted as assistant to Mr. Thomas Martin in the secretarial duties connected with a movement for the reform of the medical position under the Poor-law, thus getting an early insight into one of the most interesting medico-political problems of the day. He also acted with Mr. Martin as secretary to the Surrey Medical Benevolent Society, which for over 30 years had been active in the county to meet certain wants of the medical profession. Young Holman, therefore, when he went to Guy's Hospital in 1849, had received already a liberal preliminary training, having watched the conduct of a large country practice for two years, and being also singularly well acquainted with the difficulties of professional life as a whole. At Guy's Hospital he won the Pupils' Proficiency Prize of the Hospital Physical Society, and secured excellent testimonials from Aston Key, Hughes, and Cock. In 1851 he proceeded to Edinburgh to complete his studies, taking in the same year the M.D. degree of St. Andrews University, and the Membership of the Royal College of Surgeons of England. Then followed the sojourn in Paris, which in those days the ambitious young medical man made if he was so fortunate as to have the chance, and in 1852 he returned to Reigate, and joined his brother-in-law, Mr. Peter Martin, in the work of practice. Here he married shortly afterwards Marion, daughter of William Street of Norwood, and here he remained until 1892 a partner, and for a long time the senior partner, in a famous firm of general practitioners. The valuable work that he did in the district was well known, not only to those who directly benefited by it, but to many London consultants who at different times had been summoned by him into the country; and we may repeat here the regret that we have registered on previous occasions that the experiences of those who conduct these great practices can seldom be put on record. The lessons in therapeutics of a general sort which they could impart do not lend themselves to literary shape, while the contents of their case-books cannot for obvious reasons be used with the freedom of hospital reports. But the conduct for 40 years of a great general practice, in the scope of whose working persons of all classes suffering from innumerable ills were included, must have given Holman a knowledge not only of pathology and therapeutics but of men and manners, the fruits of which knowledge we would gladly have shared.

In 1892 he left Reigate, literally tearing himself away from his beautiful home, and settled in London, in Gloucester-place, Portman-square, where for some years he continued to practise in a somewhat desultory manner, seeing certain of his old patients as a consultant, and being called

SIR CONSTANTINE HOLMAN.

in counsel by many friends. He still kept up, however, an interest in Reigate institutions, for at the time of his death he was an active member of the council of the Reigate Grammar School and of the governing bodies of St. Anne's, Redhill, and of the Idiot Asylum at Earlswood.

In turning now to Sir Constantine Holman's public career we may well begin with a quotation from our own columns: "For the last 50 years the name of Constantine Holman has been prominent in all the public work of the profession as treasurer and Vice-President of the British Medical Association, Vice-President of the British Medical Benevolent Fund, President of the Surrey Medical Benevolent Society, treasurer and Vice-President of Epsom College (for which he has collected over £7000 by his personal efforts), and member of the committee of the Royal Asylum of St. Anne's, he has rendered signal services to his profession and the cause of charity. So great have been these services that it is thought desirable by his friends and colleagues that some record of their appreciation should be established." These were the words of a proposal made in April, 1904, to establish a testimonial to Dr. Holman, which was to take the form of an art and reading-room at Epsom College, to be called the "Holman Art and Reading Room," and whoever knows the whole story of Holman's connexion with Epsom College will allow that they are moderate words.

About 1847 Mr. John Propert, a London medical man, in the course of reconstructing the Medical Protection Office, in which he displayed the highest personal generosity, determined to combine with it the more ambitious as well as nobler scheme of a "Medical Benevolent College and Fund for the distressed members of the medical profession or their widows." About the same time, 1848, Mr. Thomas Martin was secretary at a meeting of medical men held in the Hanover-square rooms in favour of Poor-law medical reform, and at this meeting young Holman assisted him, and from an account of the meeting published in THE LANCET of that date it will be seen that Mr. Propert was also present. It is easy to understand how through identity of interests Propert and Martin, both established practitioners of high philanthropic aims, were drawn together, and Holman acquired an interest in their schemes. He has recorded that he first met Propert at a meeting of the members of the Surrey Medical Benevolent Society when the latter had come down to negotiate the purchase of four scholarships by the society. The Epsom College scheme was by this time started and Holman became a supporter of it when quite a young man. But his active association with the College began in 1887 when he accepted the office of treasurer, which he held from that date until 1906, during which period there was a gratifying and continuous progress in regard to the College itself and to the Royal Medical Foundation attached to it. This general improvement was due in a great measure to the carefully thought-out and broad-minded policy of its treasurer, aided, as he was ever ready to acknowledge, by the loyal support of a representative council. In the early days of his treasurership the institution fortunately received some generous benefactions, amongst which was the munificent bequest from the late Dr. Bowen of Melbourne. This money enabled the council to carry out a scheme that had long been contemplated—namely, the increase of all pensions from 20 guineas to £30 a year, in order that the aged annuitants might be enabled to spend their declining years amongst their friends and relatives, instead of having to leave all other associations to reside at Epsom. For a long time it had been increasingly difficult to find pensioners who were willing to accept the furnished residences at the College, comfortable though they were; so much so, that some of the suites of rooms were let for school purposes, the rents being divided amongst the senior pensioners in order to raise their annuities to £30. Holman saw that, alike for the good of the school and that of the annuitants, the time had come when the residential system must be done away with, and undoubtedly the College gained in prestige by the alteration in method. One of the first important steps taken by the new treasurer was to introduce an entirely new system of keeping the accounts of the institution under the direction of a chartered accountant, and to provide detailed average sheets in order to enable the council to note increases or decreases in the various branches of the income and expenditure account. On the resignation of Mr. Robert Freeman, the secretary, in 1890, the council decided that all the clerical work in connexion with the school itself should be transacted at Epsom by a bursar, and that the work appertaining to the foundation should be carried out by the secretary at the London office. This proper division of labour was supported heartily by Holman, and the system, which is still in operation, has been found to work excellently. In 1890 the rifle corps, which is now in a flourishing condition, was inaugurated, and the cricket pavilion was built; two years later the fire brigade was instituted, a new service for the prevention of fire being provided shortly afterwards. For all these improvements the treasurer had to find the money, and he was wont at this time to style himself an ingrained and inveterate beggar. In 1894 an amending Act of Parliament was obtained, so as to settle definitely, amongst other questions, the power of the council to admit to the College the sons of those other than members of the medical profession. Power was taken in this Act to alter the name of the College whenever the governors should deem it expedient to make the change, and under this power the present title of Epsom College was adopted at a special meeting of the governors. Holman was deeply interested in this reform, for he perceived that the future of Epsom College as a public school largely depended upon a proper admixture of the class of boys admitted. A medical foundation it would always remain, with special benefits for the sons of medical men, but both the country at large and the medical profession would benefit by the erection of the College into a large and general public school. In 1895 the foundation stone of the lower school was laid by His late Majesty King Edward VII., who was then Prince of Wales, and in this year the laundry was built and fully equipped for doing the whole of the washing for boys, masters, and servants. In the following year the chancel to the College chapel was built and the College well was deepened, thus providing an efficient water-supply. In 1901 the chemical laboratory and lecture theatre were extended, the swimming-bath being enlarged two years later at a cost of over £1000. Somehow, however, the money was found and the necessary credit obtained, and in 1903 a most successful festival dinner in aid of the foundation was held. His Majesty the King, who presided, graciously paid a visit of inspection to the College beforehand. Soon after this event the honour of knighthood was conferred upon Dr. Holman in recognition of the services which he had rendered to the medical profession. Beginning with the year 1904, the financial resources of the College were severely taxed by the cost, which ultimately amounted to £8000, of relaying the whole of the College drainage. Again the treasurer, with his energetic and capable council, faced the position. To meet the necessary expenses almost all the investments belonging to the general purposes fund had to be realised, but Holman and his colleagues were firm that the sanitation of the buildings must be above reproach, and hopeful that so good a work would not be left to suffer—a hope that was speedily realised by some handsome additions to the funds. Sir Constantine Holman's services to the College received public recognition in 1905 by the erection of the "Holman" building, to which reference has already been made; the contributions to defray the cost of this building were collected by the late Dr. John H. Galton, who was then chairman of the works committee.

In 1906 Sir Constantine Holman felt, and frankly stated, that advancing years made it incumbent upon him to resign the office of treasurer with its numerous anxieties. In relinquishing the work he loved so much he had the gratification of knowing that he left the College in a flourishing condition and with a first-class reputation; with 254 boys, as against 192 when he accepted the office; with an addition of 27 acres of freehold land which were acquired during his treasurership; and with all the constitutional and structural improvements which we have enumerated. In accepting his resignation the governors elected him a member of the council, thus enabling his valued experience to be placed at the service of that body until within a few weeks of his death. He worked unremittingly till the end in collecting contributions for the foundation, and had the satisfaction only two months ago of completing the collection of £10,000!

Sir Constantine Holman was a prominent member of, and worker for, the British Medical Association. In 1853 he assisted Messrs. Thomas and Peter Martin in the secretaryship of the South-Eastern branch. In 1863 he became secretary and was President of the branch on the occasion of its twenty-fifth annual meeting. He was almost continuously a

member of the old Committee of Council, and in 1887 he was elected treasurer of the Association. During his long connexion with the affairs of the Association he took a leading part in procuring the removal of the central offices of the Association to London and in bringing about a direct representation of the branches on the Council. His lifelong and successful labours for the improvement of the financial conditions of medical charities—he was secretary for 15 years and president for double that time of the Surrey Medical Benevolent Society—no less than his varied and valuable services to the Association, determined the Council of the British Medical Association on Oct. 19th, 1904, to confer upon him the Gold Medal for Distinguished Merit—the chief honour in its gift, and no honour was ever more richly deserved or aptly bestowed.

We have said enough to show that in Sir Constantine Holman we have lost not only a prominent member of the medical profession but a great man of affairs. In private life a sportsman and a most hospitable man, his friendships outside the medical profession were very numerous, and this fact gave to his views both breadth and generosity. Moreover, his advice, very straight and not always palatable advice, was ever at the service of those who sought it, and its uncompromising nature lost nothing from his physique, his stately presence and dignified manner fitting well with his ideals of conduct. The sympathies of all the medical profession will be extended to Lady Holman and her family in their bereavement.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced: Dr. Adolf Steinhausen, surgeon-general in the Prussian Army and author of various literary works. His death occurred suddenly at Metz from heart disease. He was 51 years of age.—Dr. Jobert, formerly professor of zoology and animal physiology in the Faculty of Sciences, Dijon.—Dr. Karl Hermann Landgraf of Bayreuth, who was medical attendant of Richard Wagner for many years. His age was 89.—Dr. Marc Dufour, professor of ophthalmology in the University of Lausanne.—Dr. Catrin, surgeon to the Valenciennes Hospital and corresponding member of the Paris Academy of Medicine.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—**At examinations held in August the following candidates passed in the subjects indicated:—**

Surgery.—F. H. W. Brewer (Section II.), St. Bartholomew's Hospital; A. Cordon (Section II.), Birmingham; W. J. G. Gayton (Section II.), London Hospital; M. S. Jevons (Section II.), Royal Free Hospital; J. C. Johnson (Section II.), Middlesex Hospital; J. A. Laughton (Section II.), Charing Cross Hospital; G. Meyer (Section I.), Graz; J. G. Reidy (sections I. and II.), London Hospital; and H. Stanger (Sections I. and II.), Leeds.

Medicine.—H. R. L. Allott (Sections I. and II.), Sheffield; W. J. Gibson (Sections I. and II.), London Hospital; J. M. Moll (Sections I. and II.), Utrecht and St. Bartholomew's Hospital; J. G. Reidy (Section II.), London Hospital; and A. D. Vernon Taylor (Sections I. and II.), Guy's Hospital.

Forensic Medicine.—E. M. E. Hall, Royal Free Hospital; C. B. Hawthorne, Cambridge and Birmingham; J. B. Holmes, Manchester; J. C. Johnson, Middlesex Hospital; A. D. Vernon Taylor, Guy's Hospital; and C. B. Welsby, London Hospital.

Midwifery.—D. E. S. Davies, King's College Hospital; E. M. E. Hall, Royal Free Hospital; O. Marshall, University College Hospital; J. M. Moll, Utrecht and St. Bartholomew's Hospital; J. G. Reidy, London Hospital; and A. D. Vernon Taylor, Guy's Hospital.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: F. H. W. Brewer, W. J. G. Gayton, M. S. Jevons, J. A. Laughton, J. G. Reidy, and H. Stanger.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Two well-known and popular professors who are retiring have just given their final lectures with the formalities and complimentary farewells usual on such occasions—Dr. Robert von Olshausen, Professor of Midwifery, and Dr. Hermann, Senator Professor of Medicine. Professor von Leyden has been obliged by the state of his health to resign the post of Principal of the Cancer Research Institute. Dr. Franz, Professor of Gynæcology at Kiel, has been appointed to succeed Dr. Bumm as Director of the Midwifery and Gynæcological Clinic of the Charité. Dr. Julius Heller, *privat-docent* of Dermatology, has been promoted to a Professorship. Sheikh Hamed Waly, who has for some years been reader in Arabic in the Berlin Oriental Seminary, has studied medicine to such good purpose that on taking his degree he was awarded it *summâ cum laude*. His dissertation dealt with the history of Arabic medicine. He is 39 years of age, and has been appointed by the Egyptian Government to an important post in the Medical Service.—*Bonn:* Dr. Friedrich Froelich, *privat-docent* of Physiology, has been granted the title of Professor.—*Breslau:* Dr. R. Fuchs, Extraordinary Professor in the University of Erlangen, has been appointed Ordinary Professor of Physiology. Dr. Karl Göbel, *privat-docent* of Surgery, has been granted the title of Professor.—*Halle:* Dr. Schwarzte, Professor of Otology, is retiring.—*Innsbruck:* Dr. G. Bayer has been recognised as *privat docent* of General and Experimental Pathology.—*Jena:* Dr. Riedel is retiring from the chair of Surgery on account of illness.—*Munich:* Dr. Edens has been recognised as *privat docent* of Medicine, and Dr. Schmincke of Würzburg as *privat-docent* of Pathological Anatomy, and Dr. W. Gilbert as *privat-docent* of Ophthalmology.—*Philadelphia* (*College of Physicians and Surgeons*): The Alvarenga Prize has been awarded to Dr. M. Katzenstein for his researches on the collateral circulation of the kidneys.—*Prague* (*German University*): Dr. Hans Rotky, Assistant in the Medical Clinic, has been recognised as *privat-docent* of Medicine.—*Rostock:* Dr. Winterstein, Assistant in the Physiological Institute and titular professor, has been appointed to act for Professor Nagel, who is in bad health, during the coming winter session. Dr. Meinertz, *privat-docent* of Medicine, *Oberarzt* of the Medical Policlinic, has been granted the title of Professor.—*Tübingen:* Dr. E. Reiss has been recognised as *privat-docent* of Psychiatry and Neurology.—*Vienna:* Dr. Arthur Foges has been recognised as *privat docent* of Midwifery and Gynæcology.—*Zürich:* The names proposed as successor to Dr. Krönlein, who is resigning the chair of Surgery, are Dr. Konrad Brunner of Munsterlingen and Professor Payr of Greifswald. In case neither of these gentlemen are willing to accept the post it will be offered to Professor Perthes of Leipsic.

THE ASSOCIATION OF FELLOWS OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.—**The following resolution was passed by the Council of the Association of Fellows of the Royal College of Surgeons, Ireland, at a meeting held on August 16th:—**

The attention of the Association of Fellows of the Royal College of Surgeons, Ireland, having been drawn to an advertisement of the Manchester Royal Infirmary and Dispensary for an Hon. Assistant Surgeon, where it is stipulated that candidates must be Fellows of the Royal College of Surgeons, England,

This Association hereby protests against such invidious distinctions being drawn between the Irish and English Colleges, inasmuch as the Fellowship of the Irish College is in every way equal to that of the English College, and also that some of the most eminent surgeons in England at the present time are Fellows of the Royal College of Surgeons in Ireland.

WATER-SUPPLY OF CAMELFORD.—**The Local Government Board has sanctioned the application of the Camelford (Cornwall) rural district council for permission to borrow £2556 for purposes of a water-supply for the parish of Lantiglos-with-Camelford.**

INDIAN HOSPITAL MEMORIALS TO KING EDWARD VII.—**The first subscription list to the Bombay Presidency King Edward Memorial, which is to take the form of a hospital in the northern part of the Island of Bombay, with, if possible, a sanatorium for consumptives in some suitable place, and a convalescent home, has just been published, and amounts to 89,114 rupees. At a great meeting held in the town hall, Lahore, Sir Louis Dane, Governor-General, outlined the scheme for the Punjab Memorial to his late Majesty. It was proposed, he said, to improve the Punjab Medical College and Hospital, and along with it the Lady Aitchison Hospital for purdah ladies, and the Lady Lyall Home for female medical students, which could, and should, be expanded into a female and purdah medical school and college. To carry out the scheme it would be necessary to take up the site of the present Veterinary College. This institution it was proposed to transfer to more commodious quarters in Lahore, which would enable them to raise its status. Subscriptions totalling over six lakhs of rupees were announced. The public of Bassein have decided to perpetuate the memory of the late King by erecting a hospital, calculated to cost half a lakh of rupees, to be called the King Edward VII. Hospital for Women and Children.**

WEST DERBY BOARD OF GUARDIANS: DETENTION OF THE FEEBLE-MINDED.—In reference to the overlapping of charities in Liverpool, the Toxteth guardians have approved of a scheme of voluntary aid. It was reported at the meeting of the West Derby board of guardians on August 16th that 256 unions throughout the country agreed with the suggestion of the West Derby union with reference to the detention of feeble-minded females, and that a great many Members of Parliament were entirely in sympathy with that object. The only difficulty in the way, it was pointed out by the clerk, was to obtain the help of the President of the Local Government Board in bringing this about by legislation, because Mr. John Burns had stated that it would be difficult to get Parliament to interfere with the liberties of the British subject. At the same meeting it was agreed to contribute £300 per annum for three years to the funds of the Liverpool council for voluntary aid as the contribution of the West Derby guardians towards the maintenance of a general register for recording the cases of all persons in receipt of Poor-law relief, and relief from all sources of charity. The object of the register, it was pointed out, is to make the efforts of the charitable public of Liverpool as intelligent as possible. The charitable public were quite open-handed, but it was very undesirable that the different charitable organisations should be ignorant of the work which each of them did. By means of the register complete information would be supplied at an early stage, which would be used to prevent overlapping. It was also pointed out that much voluntary charity tended to encourage pauperism and deception for want of proper inquiries and organisation. On the other hand, a regular organised charity by its hard-and-fast lines tended to work in a cruel way in individual cases, but where combination could be effected the one could supplement what the other lacked. The Toxteth guardians at their meeting on August 25th also decided to subscribe £100 to the Liverpool council of voluntary aid towards the cost of keeping a general register. Mr. Chaloner Dowdall, the ex-Lord Mayor of Liverpool, the acting chairman of the council, together with the secretary of the Central Relief Society, attended the meeting of the guardians, and explained the new scheme of the council. Mr. Dowdall said that an enormous amount of money was being spent in Liverpool yearly in relieving distress, and it was a matter of importance that that money should be expended to the best public advantage. By means of a general register useful information would be available with regard to cases of distress, and it would also prevent overlapping in the distribution of relief. One result of the scheme would be to discover impostures, but the great object of the council was to get at really deserving cases.

Mr. Francis Vacher, late medical officer of health of Cheshire, has been appointed by the Lord Chancellor to the commission of the peace of Cheshire. Originally medical officer of health of Birkenhead, Mr. Vacher transferred his services in 1891 to the county, and filled the position of medical officer of health until 18 months ago, when he resigned after a career of great usefulness and distinction.

LITERARY INTELLIGENCE.—The following works will be published by the Oxford Medical Publications in the autumn: "History of Medicine," by Professor Max von Neuburger of Berlin, translated by Dr. E. Playfair, and with introduction by Professor Osler. This is a large work dealing with the history of medicine from the earliest times. It is in two volumes, the first of which will appear early in October, and which deals with medicine up to the Middle Ages. "System of Syphilis," edited by Mr. D'Arcy Power and Dr. J. Keogh Murphy. Volumes V. and VI. The fifth volume treats of syphilis of the skin, eye, ear, nose, and throat, and the sixth of syphilis with regard to the public services. "Handbook of the Surgery of Children." This is a translation by Dr. Murphy of Professor Kermisson's well-known work. "Treatment of Fractures." This is a large work by Mr. J. Hogarth Pringle. "Clinical Pathology." This book has been written by Mr. T. J. Horder. "A Textbook of Massage." Miss L. Despard is the author of this book, which, in addition to treating of the theory and work of massage, also considers anatomy and physiology in relation thereto. "Puerperal Infection." This is a book by Mr. A. W. W. Lea. "Practical Organic Chemistry." The author of this book is Mr. A. M. Kellas.—A new volume by Professor F. W. Mott, F.R.S., is about to be added to Harper's Library of Living Thought, "The Brain and the Voice in Speech and Song." It is a study of voice production as one of the distinctive attributes of the human race, and also contains much to interest the singer and the speaker.—Messrs. Baillière, Tindall, and Cox announce the near appearance of a short book on Medical Education by Dr. Squire Sprigge.

THE WELSH DINNER.—The annual dinner for 1910 will be held on Friday, Sept 30th, at the Criterion Restaurant, Piccadilly, London, W. Mr. Robert Jones of Liverpool will preside. Tickets for the dinner may be obtained on application to Mr. J. Howell Evans, 25, Berkeley-square, London, W.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

A Practical Treatise on Diseases of the Skin. For the Use of Students and Practitioners. By James Nevins Hyde, A.M., M.D. Eighth and revised edition. Price 25s. net.

BLAKISTON'S (P) SON AND CO., Philadelphia.

Medical Service in Campaign. A Handbook for Medical Officers in the Field. By Major Paul Frederick Straub, Medical Corps (General Staff), United States Army. Prepared under the Direction of the Surgeon-General, United States Army, and published by Authority of the War Department. Price $1.50 net.

DULAU AND CO., LIMITED, London.

Department of Applied Mathematics, University College, University of London. Drapers' Company Research Memoirs. Studies in National Deterioration. VI. A Third Study of the Statistics of Pulmonary Tuberculosis. The Mortality of the Tuberculous and Sanatorium Treatment. By W. Palin Elderton, F.I.A., and S. J. Perry, A.I.A. Price 3s.

EDUCATIONAL BOOK COMPANY, LIMITED, 210, Temple-chambers, London, E.C.

The Meat Industry and Meat Inspection. A Comprehensive Account of the Principal Animals and Fish, including Cattle, Sheep, Pigs, Poultry and Game, supplied to the British Meat Market, together with a Description of the Various Industrial Processes connected therewith and the Scientific Inspection of Meat. By Gerald R. Leighton, M.D., C.M., F.R.S.E., Professor of Pathology, Bacteriology, and Meat Inspection at the Royal (Dick) Veterinary College, Edinburgh; and Loudon M. Douglas. Lecturer on the Meat Industry, Edinburgh; Editor of Douglas's Encyclopædia for the Meat, Bacon, and Food Trades. 35 coloured plates. 1000 illustrations. Five Volumes. Price £4 17s. 6d.

ESSEX FIELD CLUB, Essex Museum of Natural History, Romford-road, Stratford, Essex. SIMPKIN, MARSHALL, AND CO., LIMITED, London.

Essex Field Club Special Memoirs. Vol. IV. A History of the Mineral Waters and Medicinal Springs of the County of Essex. By Miller Christy, F.L.S., and Miss May Thresh. With a Critical Note by W. H. Dalton, F.G.S. Price not stated.

FUNK AND WAGNALLS COMPANY, London and New York.

Dogs, Their Breeds and Characteristics. A Popular Illustrated Review. Supervised by A. Knighton. Including Dissectible Model of Newfoundland Dog. Price 7s. 6d.

The Story of the Locomotive. Compiled from Authoritative Sources. Including a Coloured Dissectible Model of a Passenger Express Locomotive. Price 5s.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

Hay Fever and Paroxysmal Sneezing. (Vasomotor Rhinitis.) By Eugene S. Yonge, M.D. Edin. Price not stated.

HÄRING, O., VERLAG VON, Gneisenaustrasse, 15, Berlin.

Gedanken zu einer Universalpathologie. Von Dr. med. vet. et phil. Friedrich Freytag. Price Pf.80.

H. A. W. OFFICES, 7, Brazennose-street, Manchester.

The Death-dealing Insects and their Story. By C. Conyers Morrell. Price 1s. net.

KELLY, CHARLES H., 25-35, City-road, and 26, Paternoster-row, London, E.C.

National Health Manuals. Childhood. Edited by T. N. Kelynack, M.D. Price 1s. net.

KNIGHT, CHARLES, AND CO., LIMITED, 227-239, Tooley-street, London, S.E.

The Housing, Town Planning, &c., Act, 1909. (9 Edw. VII. Ch. 44), with Introduction, Full Explanatory Notes, and Index. By Wm. A. Casson (of the South-Eastern Circuit), and Athelstan Ridgway, LL.B. (Lond.), Barristers-at-Law. Second edition. Price 3s. 6d.

LAURIE, T. WERNER, London.

The Old Testament Story. Told to the Young. By Gladys Davidson. Price 6s. net.

Popular Drugs, Their Use and Abuse. By Sydney Hillier, M.D. Price 3s. 6d. net.

The Happy Moralist. By Hubert Bland. Price 1s. net.

LEHMANN, J. F., VERLAG, München.

Differential-diagnostische Tabellen der inneren Krankheiten. Von J. Cemach, in Wien. Price M.3.

LIPPINCOTT (J. B.) COMPANY, Philadelphia and London.

Lippincott's New Medical Series. Edited by Francis R. Packard, M.D. Röntgen Rays and Electro-Therapeutics. With Chapters on Radium and Phototherapy. By Mibran Krikor Kassabian, M.D. Second edition. Price 15s. net.

Manual of Human Embryology. Written by Charles R. Bardeen, Herbert M. Evans, Walter Felix, Otto Grosser, Franz Keibel, Frederic T. Lewis, Warren H. Lewis, J. Playfair McMurrich, Franklin P. Mall, Charles S. Minot, Felix Pinkus, Florence R. Sabin, George L. Streeter, Julius Tandler, and Emil Zuckerkandl. Edited by Franz Keibel and Franklin P. Mall. In Two Volumes. Vol. I. Price 30s. net per volume.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, Sixty-Sixth Street and Avenue A., New York, U.S.A.

Studies from the Rockefeller Institute for Medical Research. Reprints. Vol. X. 1910. Price not stated.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.

Dyspepsia. its Varieties and Treatment. By W. Soltau Fenwick, M.D. Lond. Price 13s. net.

Nursing in Diseases of the Eye, Ear, Nose, and Throat. By the Committee on Nurses of the Manhattan Eye, Ear, and Throat Hospital: J. Edward Giles, M.D., Arthur B. Duel, M.D., Harmon Smith, M.D., assisted by John R. Shannon, M.D., and John R. Page, M.D. With Chapters by Herbert B. Wilcox, M.D., and Eugenia D. Ayers, Superintendent of Nurses. Price 6s. 6d. net.

Dislocations and Joint-Fractures. By Frederic J. Cotton, A.M., M.D. Price, cloth, 25s. net.

STEINHEIL, G., Paris.

Précis du Traitement des Fractures par le Massage et la Mobilisation. Par le Dr. Just Lucas-Championnière. Price Fr.3.50.

L'Aérophagie. Par le Dr. H. Mauban. Préface de M. le Dr. Albert Mathieu. Price Fr. 2.50.

L'Aphasie dans ses Rapports avec la Démence et les Vésanies (Étude Historique, Clinique et Diagnostique; Considérations Médico-légales). Par le Docteur Maurice Brissot. Price Fr. 8.

La Greffe Ovarienne. Historique, Résultats Cliniques et Thérapeutiques. Par le Docteur Ivan Scheurer. Price Fr. 4.50.

De l'Emploi Thérapeutique de Chlorure de Magnésium administré a Faibles Doses (En particulier dans la Constipation et quelques Affections qui lui sont consécutives). Par le Docteur Maurice Chibret. Price Fr.3.50.

SUPERINTENDENT, GOVERNMENT PRINTING, INDIA, Calcutta.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. New Series. No. 37. Investigations on Bengal Jail Dietaries. By Captain D. McCay, M.B., B.Ch., B.A.O., I.M.S. Price, Rs. 2-6-0, or 4s. 3d.

SWAN SONNENSCHEIN AND CO., LIMITED, London.

Spiritism and Insanity. By Dr. Marcel Viollet, Physician to the Lunatic Asylum, Paris. (This book forms part of the Library of Experimental Psychology and Metapsychism, published under the direction of Dr. Raymond Meunier of Paris.) Price 2s. 6d. net.

TREWENDT'S (EDUARD) NACHFOLGER, VERLAG VON, Berlin, W. 50.

Ein neues Gerät und neue Übungen der Schwedischen Heilgymnastik zur Behandlung von Rückgrats-Verkrümmungen. Von Geh. Hofrat J. Oldevig, Dresden. Mit einer Einleitung von Dr. med. Axel Tagesson-Möller. Price M.1.80.

URBAN UND SCHWARZENBERG, Berlin and Vienna.

Lehrbuch der Ohrenheilkunde. Von Dr. Victor Urbantschitsch. Fünfte, vollständig neubearbeitete Auflage. Price, paper, M.18; bound, M.20.

Fortschritte der Naturwissenschaftlichen Forschung. Herausgegeben von Professor Dr. E. Abderhalden, Berlin. Erster Band. Price, paper, M.10; bound, M.12.

Enzyklopädie der Mikroskopischen Technik. Herausgegeben von Professor Dr. Paul Ehrlich, Dr. Rudolf Krause, Professor Dr. Max Mosse, Professor Dr. Heinrich Rosin und weil. Professor Dr. Karl Weigert. Zweite, vermehrte und verbesserte Auflage. I. Band: A-K. II. Band: L-Z. Preis des kompletten Werkes in 2 Bänden broschiert, M.50; in 2 Originalhalbfranzbänden gebunden, M.55.

Lehrbuch der Kinderheilkunde. Für Aerzte und Studierende. Von Professor Dr. med. Bernhard Bendix. Sechste, durchgesehene und verbesserte Auflage. Price, paper, M.15; bound, M.17.

Lehrbuch der Urologie. Mit Einschluss der männlichen Sexualerkrankungen. Von Dr. Leopold Casper. Zweite, neubearbeitete und vermehrte Auflage. Price paper, M.15; bound, M.17.

UNIVERSITY TUTORIAL PRESS, LIMITED, Burlington House, Cambridge, and 32, Red Lion-square, Holborn, London, W.C.

Matriculation Directory. No. 55. June, 1910. With Articles on Text-books. Price 1s. net.

UNIVERSITY TUTORIAL PRESS, LIMITED (W. B. CLIVE), Drury-lane, London, W.C.

The University Tutorial Series. Science German Course. By C. W. Paget Moffatt, M.A. Lond., M.B., B.C. Camb. Second edition, enlarged. Price 3s. 6d.

WHITAKER, J., AND SONS, LIMITED, London.

The Green Book of London Society. Edited by Douglas Sladen and W. Wigmore. June, 1910. Price 5s. net.

WILEY, JOHN, AND SONS, New York. CHAPMAN AND HALL, LIMITED, London.

Œdema. A Study of the Physiology and the Pathology of Water Absorption by the Living Organism. By Martin H. Fischer, Professor of Pathology in the Oakland School of Medicine, Oakland, California. The 1904 Nathan Lewis Hatfield Prize Essay of the College of Physicians of Philadelphia. Price $2 net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

COPPOCK, HAROLD, M.B., Ch.B. Vict., has been appointed Assistant Medical Officer to the National Sanatorium, Benenden, Kent.

CUNLIFFE, E. N., M.D., Ch.B. Vict., M.B., B.S. Lond., M.R.C.P. Lond., has been appointed Honorary Assistant Physician to the Manchester Hospital for Consumption and Diseases of the Throat.

DIGGLE, F. H., M.B., Ch.B. Vict., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed a Junior House Surgeon to the Manchester Royal Infirmary.

ELMSLIE, A. H., M.B., Ch.B. Edin., has been appointed House Physician to the Manchester Royal Infirmary.

FLETCHER, DUNCAN, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed School Medical Officer for the Island Section of Inverness-shire.

FRENCH, G. J., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed a Senior House Surgeon to the Manchester Royal Infirmary.

HORSBURGH, E. L., M.B., B.S. Lond., has been appointed a Junior House Surgeon to the Manchester Royal Infirmary.

JELLICOE, STANLEY COLEMAN, L.R.C.P. Lond., M.R.C.S. Eng., has been appointed Medical Officer of Health by the Totnes (Devon) Rural District.

LANG, GORDON A., M.B., C.M. Aberd., has been appointed School Medical Officer for the Mainland Section of Inverness-shire.

NICHOLLS, G. E. E., M.B., Ch.B. Vict., has been appointed a Senior House Surgeon to the Manchester Royal Infirmary.

PARR, THOMAS, M.B., B.Ch. Dubl., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Drogheda District of the County of Louth.

RANDOLPH, CHARLES, M.R.C.S. Eng., L.R.C.P. Edin., has been appointed District Medical Officer by the Dulverton (Somerset) Board of Guardians.

SHEPHERD, T. S., M.B., Ch.B., F.R.C.S. Edin., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed District Medical Officer by the Ross Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Junior Resident Officer. Salary £90 per annum, with rooms and attendance.

CAMBRIDGE, CAMBRIDGESHIRE, &c., LUNATIC ASYLUM, Fulbourn, near Cambridge.—Second Assistant Medical Officer, unmarried. Salary £120 per annum, with board, lodging, and attendance.

CHELTENHAM GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £75 per annum, with board and lodging.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—House Physician. Salary £60 per annum, with board, apartments, and laundry.

CITY OF LONDON LYING-IN HOSPITAL, City-road, E.C.—Resident Medical Officer for six months. Salary at rate of £50 per annum, with board, washing, and lodging.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with rooms, board, washing, &c.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £100 per annum, with board, residence, washing, &c.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Surgeon. Salary at rate of £75 per annum, with board, residence, and laundry.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, S.E.—House Surgeon for six months. Salary at rate of £60 per annum, with board, residence, and washing.

FRENCH HOSPITAL, 172, Shaftesbury-avenue, W.C.—Resident Medical Officer, unmarried. Salary £100 per annum, with board and laundry.

HARROGATE INFIRMARY.—House Surgeon. Salary £75 per annum, with board, residence, and laundry.

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon for six months. Salary £20, with rooms, board, and washing.

JERSEY INFIRMARY AND DISPENSARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging and attendance.

LEICESTER INFIRMARY.—House Physician. Salary at rate of £100 per annum, with board, lodging, and washing.

LIVERPOOL, CITY INFECTIOUS DISEASES HOSPITAL.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £60 per annum with board and residence.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near Manchester.—Resident Medical Officer, unmarried. Salary first six months £40, and second £50.

MANCHESTER WORKHOUSE, Crumpsall.—Junior Resident Assistant Medical Officer, unmarried. Salary £110 per annum, with apartments, fire, light, washing, and attendance.

METROPOLITAN HOSPITAL Kingsland-road, N.E.—House Physician, House Surgeon, Assistant House Physician, and Assistant House Surgeon, all for six months. Salary for House Physician and House Surgeon at rate of £40 per annum; Assistant House Physician and Assistant House Surgeon at rate of

£20 per annum, with residence and board. Also Resident Anæsthetist. Salary at rate of £60 per annum, with residence and board.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Assistant House Surgeon. Salary £75 per annum, with residence, board, and washing.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—House Surgeon. Salary £60 per annum, with board, residence, and laundry.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing. Also Assistant House Surgeon for six months. Salary £20, with board, lodging, and washing.

PORTSMOUTH WORKHOUSE INFIRMARY, WORKHOUSE, AND CHILDREN'S HOME.—First Assistant Resident Medical Officer and Second Assistant Resident Medical Officer, both unmarried. Salary in each case £120 per annum, with apartments, rations, &c.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer, unmarried, for six months. Salary £130, with board, residence, and washing.

PRESTWICH COUNTY ASYLUM, Manchester.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, and washing.

REDHILL, EARLSWOOD ASYLUM.—Assistant Medical Officer, unmarried. Salary £130, rising to £150 per annum, with board, lodging, washing, &c.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square.—Joint Morning House Anæsthetist. Salary £25 per annum.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at rate of £60 per annum, with board, lodging, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Senior House Surgeon. Salary at rate of £100 per annum, with board and residence.

ROYAL NAVAL MEDICAL SERVICE.—Fifteen Commissions.

ROYAL PIMLICO DISPENSARY, 104, Buckingham Palace-road.—Three Visiting Medical Officers and a Dispenser.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £80 per annum, all found.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

SALFORD ROYAL HOSPITAL.—House Surgeon. Salary at rate of £60 per annum. Also Junior House Surgeon. Salary at rate of £50 per annum. Each for six months, with board and residence.

SALFORD UNION INFIRMARY.—Resident Assistant Medical Officer, unmarried. Salary £120 per annum, with apartments, attendance, and rations.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £50 per annum, with board, lodging, and washing.

SHREWSBURY, SALOP INFIRMARY (COUNTY HOSPITAL).—House Physician. Salary at rate of £70 per annum, with board and apartments.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon, unmarried, for six months. Salary £70 per annum, with residence, board, and washing.

TEIGNMOUTH HOSPITAL, S. Devon.—House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.—Assistant Resident Medical Officer, unmarried, for six months. Salary £100 per annum, with board, lodging, &c.

WEST HARTLEPOOL, CAMERON HOSPITAL.—House Surgeon. Salary £100 per annum, with board, rooms, and washing.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Two House Physicians and Three House Surgeons for six months. Board, lodging, and laundry provided.

Births, Marriages, and Deaths.

BIRTHS.

CAMPBELL.—On August 24th, at Larbert, Stirlingshire, the wife of Robert B. Campbell, M.B., M.R.C.P., of a son.

JEFFERY.—On August 22nd, at Herne Bay, the wife of Mr. Louis Jeffery, L.D.S. Eng., of a son.

JOY.—On August 23th, at Bradfield, Berks, the wife of Norman H. Joy, M.R.C.S., of a son.

MARRIAGES.

KEELING—ALLAN.—On August 25th, at St. Edmund's Church, Southwold, by the Rev. Maxwell F. Webb, Rector of Attleborough, George Sydney Keeling, M.D., second son of the Rev. W. H. Keeling of Bradford to Florence Amy, widow of the late Richard Allan, M.B., of Attleborough, Norfolk, youngest daughter of the late John Clarkson Maynard, J.P., of Eridge, Kent.

WHITAKER—ZIMMER.—On August 25th, at Holy Trinity Church, Upper Tooting, Alfred Gurth Whitaker, M.R.C.S., L.R.C.P., to Margaret Madeline May, daughter of George F. Zimmer.

DEATHS.

EARLE.—On August 22nd, at Eastleigh, Beresford Nathaniel Earle, M.D., D.P.H. Cantab., of Winchester, aged 66 years.

ENSOR.—On August 23rd, at Cardiff, Henry Collen Ensor, M.R.C.S., L.S.A., aged 51 years.

MCKEON.—On August 30th, Hubert McKeon, L.R.C.P., L.R.C.S., of St. Kevin's, Preston Drove, Brighton, aged 63 years.

PAUL.—On August 25th, at Torquay, John Liston Paul, Deputy Surgeon-General (retd.), aged 83 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE REMUNERATION OF A POOR-LAW MEDICAL OFFICER.

AT the last meeting of the Launceston (Cornwall) Board of Guardians Dr. C. G. Gibson, district medical officer, applied for an increase in his salary; he stated that at present he received £19 per annum as medical officer to the workhouse. Dr. Gibson estimated that his expenses, including supply of medicines, amounted to £12, and in addition he made 141 professional visits; he asked that his remuneration might be £30 per annum. This request certainly seems a modest one, but the guardians unanimously decided that the application be deferred for six months, one of the members remarking that if the medical officer was not satisfied with his salary he could resign. Every remark of this nature from a guardian renders it more likely that the guardians will be deprived of their present position in respect of medical relief.

BOOTS FOR SOLDIERS.

To the Editor of THE LANCET.

SIR,—Last year you published a letter from a correspondent drawing attention to the condition of the footwear in the Territorial Force. He pointed out that the majority of the boots were very poor in quality and quite unfitted for marching and that the condition of the men's feet after a march was lamentable. Having been out during the manœuvres both last year and this I can fully confirm his remarks. A large number of the men wear their thin boots, which are absolutely unfitted for rough wear and admit the water freely. It is quite certain that were the force embodied for a month a large proportion of the men would be barefoot before the end of that time. If the force is to be of any real use steps should be taken immediately to provide the men with strong waterproof boots. Great stress should be laid on the latter quality in this country. After a very little rain the camps become quite sodden, and at present a large number of men spend most of the time with damp feet. I must plead the importance of the subject for troubling you with this letter.

I am, Sir, yours faithfully,

August 21st, 1910. CAPTAIN, R.A.M.C.T.

DOAN'S BACKACHE PILLS.

THE marvellous and speedy effect of taking *Doan's* Backache Pills has, according to our breezy contemporary *John Bull*, received a curious testimonial recently in the *Somerset Standard*. In the same issue of that paper in which a testimonial appears from a gentleman speaking to the claims of this remedy there is also printed a notice of the death of the giver of the testimonial at the early age of 36 years. The testimonialist states that upon his decision to try *Doan's* Backache Bills "they immediately began to take effect." We are not in a position to refute this statement, having no information of the period that elapsed between the writing of the testimonial and the death of the swallower.

THE POLLUTION OF SWIMMING-BATH WATER.

To the Editor of THE LANCET.

SIR,—I was much interested in your article in THE LANCET on the Pollution of Swimming-bath Water. When I was a student at Edinburgh I was a member of the Warrender Park baths. At these baths there were provided two ante-rooms, each supplied with a warm water spray. It was the unwritten law that no one should enter the swimming bath without first standing under the spray and well soaping one's person thoroughly.

Could not such spray rooms be made to all new swimming-baths, and a rule rigidly enforced that every bather must first enter the spray room and well wash himself before entering the bath? I am sure that this method would go a long way to mitigate the existing evil.

I am, Sir, yours faithfully,

JAMES R. ATKINSON, M.D., D.P.H., F.R.C.S.Edin.

Earle-street, Crewe, August 21st, 1910.

GUARDIANS AND UNQUALIFIED DENTISTRY.

A CORRESPONDENT calls our attention to a report in the *Sheffield Daily Telegraph* of August 23rd, 1910, of a meeting of the Louth Board of Guardians. The medical officer had recommended that a girl in the workhouse should have her teeth stopped by a dentist. It was proposed and seconded that the child should be sent to "Mr. Manning," and an amendment to send her to "a registered dentist" was defeated by 14 votes to eight, and the original resolution was carried. The inference from the report is that "Mr. Manning" is an unregistered person, nor do we find the name, as of Lincolnshire, in the Dentists Register for 1910. We agree with our correspondent in hoping that the auditor of the Local Government Board may surcharge the Louth guardians for indulging their personal predilections at the expense of the ratepayers.

STONE-BLIND.

To the Editor of THE LANCET.

SIR,—Mr. WM. ETTLES may, or may not, be satisfied with Mr. J. Y. W. MACALISTER'S explanation in your issue of August 20th of this expression. If he is not, and will look at *The Merchant of Venice*, Act II., Scene 2, he will find at least a suggestion of a better, where Launcelot speaks of his "true-begotten father, who, being more than sand-blind, high gravel-blind, &c."

The explanation surely is that sand-blind, gravel-blind, and stone-blind are three degrees of comparison, according to the inability of the individual to distinguish, presumably at the height of his eyes from the ground, the constituent elements of the road upon which he walks.

This has always seemed to me a logical interpretation; possibly some other of your readers can supply an earlier quotation.

I am, Sir, yours faithfully,

Highgate, N., August 30th, 1910. H. L. GREGORY.

AN OBSTINATE CASE OF PRURITUS.

To the Editor of THE LANCET.

SIR,—In reply to "P" (p. 528) *re* case of pruritus, I would suggest a trial of calcium lactate or chloride, say, gr. x. thrice daily. High-frequency currents might be useful.

I am, Sir, yours faithfully,

August 17th, 1910. W. H. H.

NEW WORDS.

WE have received from Messrs. Funk and Wagnalls of London and New York a supplement of four pages to their Standard Dictionary of the English language issued some years ago. The supplement consists of new words which have been introduced into the language, of old words in a new sense, and of words omitted. We note the addition of some well-known medical terms as follows: adrenalin, aspirin, dhobee-itch, opsonin, occlusion, and septic tank. "Belly-whopping" looks at first sight of medical interest; it turns out to be "in coasting the act of lying upon the stomach on a sled," and may have a secondary surgical interest. Terms relating to the newer kinds of locomotion naturally take up a large share of the supplement; illustrations of the Wright biplane and of the Bleriot monoplane remind us in what century we are living, and the word "Televue" suggests to unimaginative folk a very future century, for it is "a device designed to show the outline of the features of a person telephoning to the person receiving the message." A "joy ride" sounds alluring to the ear, but it is a "ride in a motor-car, usually at night, sometimes taken without the permission of the owner, and driven at excessive speed," truly an expressive and "portmanteau" word, conveying more than Lord Burleigh's famous nod. Such rides have ended before now in an accident, police-court proceedings, and heavy fines—joy may endure for a night, but heaviness cometh in the morning. The Standard Dictionary is a great work, and its supplement shows the resolute intent of the editors to keep up to date.

BUILDINGS FOR RINKING.

To the Editor of THE LANCET.

SIR,—I do not know whether your attention has been drawn to the subject of the unhealthy conditions under which roller-rinking in buildings is indulged in. The air in such buildings is most impure, and recreation in such conditions is dangerous and should be rigorously prohibited. It is mostly young people who frequent these places, and their parents or guardians should be warned of the very real and serious risk they run.

I trust that you will see your way to draw the attention of the public to the danger.

I am, Sir, yours faithfully,

Southsea, August 24th, 1910. F. H. SOMERS-GARDNER.

*** We have had no previous complaint on this score; it is obvious that all the buildings used for rinking are not similar.—ED. L.

WANTED, A HOME.

A REGULAR subscriber desires to hear from anyone who can recommend him a home for a mentally defective child whose parents could pay about 2 guineas weekly. He begs that only a really reliable home may be recommended to him and that the recommendation may come from personal knowledge.

THE TREATMENT OF THREADWORMS.

To the Editor of THE LANCET.

SIR,—I have a patient, a boy, suffering from threadworms; quassia, santonin, iron, and mag. sulph. have been tried and the case has been most intelligently treated by the mother, but there is always a specimen to be found. Can anyone help with a suggestion?

I am, Sir, yours faithfully,

August 27th, 1910. A. T.

C. F. F.—Inoculation of small-pox was introduced into this country by Lady Mary Wortley Montagu in 1721, and we believe that this is the first recorded instance of the practice in these islands.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

CONGRESSES are now getting so numerous that we have thought that a diary like the one printed below might be of service to our readers. With that idea we shall repeat it occasionally, with any necessary alterations or subtractions. The following Congresses, Conferences, and Exhibitions are announced for 1910:—

Sept. 1st–6th (Brussels).—International Congress of Pharmacy.
" 5th–10th (Brighton).—Congress of the Royal Sanitary Institute.
" 10th–14th (Brussels).—Second International Congress on Occupational Diseases.
" 13th–15th (Brussels).—International Congress on Radiology and Electricity.
" 17th–25th (Antwerp).—Fourteenth Flemish Congress of Natural and Medical Sciences and International Scientific Exhibition.
" 18th–24th (Königsberg).—Eighty-second Congress of German Scientists and Medical Men.
" 22nd–27th (Toulouse).—Sixth French Congress of Gynæcology, Obstetrics, and Pædiatrics.
" 22nd–28th (St. Petersburg).—Fifth International Congress of Obstetrics and Gynæcology.
" 27th–30th (Vienna).—Eighth International Physiological Congress.
Oct. 1st–5th (Paris).—Second International Conference for the Study of Cancer.
" 3rd–7th (London).—Sixth London Medical Exhibition.
" 3rd–7th (Berlin).—International Congress on the Care of the Insane.
" 4th–8th (Brussels).—Second International Congress of Alimentary Hygiene.
" 5th–8th (Brussels).—Ninth International Tuberculosis Conference.
" 10th–15th (London).—Town Planning Conference.
" 13th–15th (Paris).—Eleventh French Congress of Medicine.
" 16th–22nd (Barcelona).—First International Spanish Congress of Tuberculosis.
Nov. 7th–12th (Cape Town).—Twelfth South African Medical Congress (1910).

In 1911:—
May–October (Dresden).—International Hygiene Exhibition.
June and July (Romford).—Town Planning and Modern House and Cottage Exhibition.
July (Birmingham).—British Medical Association.
August or September (Berlin).—Third International Laryngo-Rhinological Congress.
September (Brussels).—Exhibition of Fractures.
Sept. 24th–30th (Rome).—International Congress on Tuberculosis.
October (Cologne).—International Congress of Criminal Anthropology.

In 1912:—
September (Washington, D.C.).—Fifteenth International Congress of Hygiene and Demography.

In 1913 the only fixture so far is in London, where the Seventeenth International Congress of Medicine will take place.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.

TUESDAY.—10 A.M., Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

WEDNESDAY.—10 A.M., Diseases of Children. Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. 2.30 P.M., Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye.

FRIDAY.—10 A.M., Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

SATURDAY.—10 A.M., Diseases of Children. Operations of the Throat, Nose, and Ear. Mr. B Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Clinical Theatre, London Hospital, Mile End-road, E.

MONDAY.—Dr Wall will take a party to Frimley Sanatorium. The train will leave Waterloo (South Station) at 1.10 P.M. Vouchers for cheap tickets may be obtained in the Warden's Office.

TUESDAY.—2 P.M., Clinical Demonstration: Dr. Grünbaum: Diseases of the Kidneys.

WEDNESDAY.—2 P.M., Clinical Demonstration: Dr. Hutchison: Diseases of the Digestive System and Children's Diseases.

THURSDAY.—2 P.M., Clinical Demonstration: Dr. T. Thompson: Diseases of the Nervous System.

FRIDAY.—2 P.M., Clinical Demonstration: Dr. L. Smith: Diseases of the Heart and Vessels.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.),

TUESDAY (6th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (7th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (8th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (9th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (10th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

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Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

The Index and Title-page to Vol. I. of 1910, which was completed with the issue of June 25th, were given in THE LANCET of July 2nd.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1910 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 31st, 1910.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Aug. 25	29·94	W.	...	97	69	55	58	61	Cloudy
,, 26	29·62	S.W.	0·39	99	69	61	63	64	Overcast
,, 27	29·83	W.	0·04	108	67	55	53	59	Cloudy
,, 28	29·77	S.	...	99	65	53	54	58	Cloudy
,, 29	29·62	S.W.	0·06	123	66	53	56	60	Fine
,, 30	29·84	S.W.	0·11	109	66	56	57	60	Cloudy
,, 31	30·24	W.	0·03	95	64	54	54	57	Cloudy

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X.—X., Fulham.

Y.—Messrs. R. Young and Co., Glasgow.

Z.—Messrs. C. Zimmermann and Co., Lond.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. J. V. Arkle, Kalgoorlie; Messrs. Armour and Co., Lond.; A. M. B. G.; A. T. G.; Dr. A.; A. O.; A. S. S. S.; Anglo-American Pharmaceutical Co., Croydon.

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